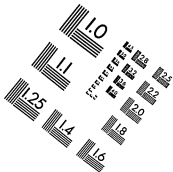
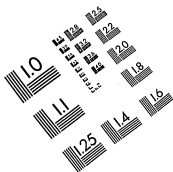




Association for
Information and Image
Management

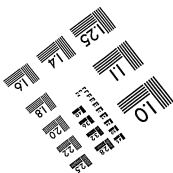
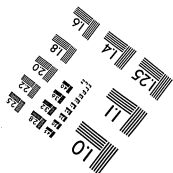
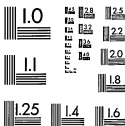
MS303-1980



Centimeter



Inches



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A SELECTIVE MICROFILM EDITION

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1985

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The pages which were microfilmed for this collection are in generally good condition in the original. There are some pages, however, which due to age are lighter than normal. Additionally, because some volumes are very large and have been bound tightly and cannot be unbound, there are intermittent occurrences of slight distortion of the edges of a small percentage of the pages. We have made every technical effort to ensure complete legibility of each and every page.

Notebook, Volume 12

This volume covers the period July-September 1877. Most of the notes and drawings are by Edison; others are by Charles Batchelor, James Adams, and John Kruest. The material in this volume relates primarily to acoustic and speaking telegraphy. There are also a few drawings dealing with etheric force, the electric light, the phonograph, and the horse clipper. The volume consists of 189 numbered, unbound leaves.

Missing pages, found in facsimile in the Telephone Interferences: 1-3, 6-7, 9-11, 13-15, 18, 22, 24-25, 27-28, 31-32, 34, 36-38, 44-48, 51, 53-59, 61-62, 65-70, 72-74, 76-78, 80-84, 86-88, 90-91, 93-98, 105-106, 111, 113, 115-116, 119, 121, 123-124, 127, 129, 131-133, 135-136, 138, 142-148, 151-152, 154, 159-168, 171, 173-179, 181-182, 184-186, 188-189.

Missing pgs: 41, 150, 180, 187.

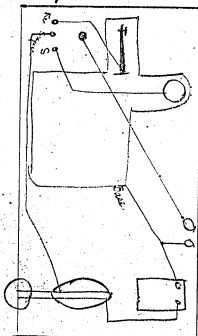
July 7th 1877

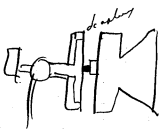
Chas. M. T. Kelso

Adams

James Adams

Mica Diaphragm complete
slit holder
Circuit Breaker
pencil name plate pins
mouth piece to tin





flexible spring

July 7 1877

in Sulphur No 2
plug -

5

T. A. EDISON,

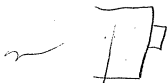
Menlo Park, N. J., 1880.

No 6. Vol 12
cut for
Epprecht into

in B-130 - N.B.S.



cut 6-12



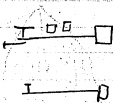
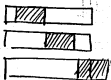
July 11 1877

of such material as will prevent the gas escaping
this speaking in one of these sets the whole of the



James Adams

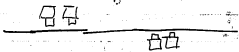
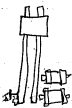
gas in the tubes vibrating & if another person places
one of them to his ear while another person is
talking in another part of the building
he will plainly hear what is said - Charles
is now trying the experiment.



180, men
 40 check out
 25 Gilliland
 50 for house
 30 Lads clothes
 175 Insurance policy
 500

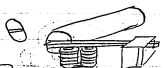


WU	200	500
915.	75	275
	<u>275</u>	225
ASP	<u>225</u>	
	500.	



8
2
4
4

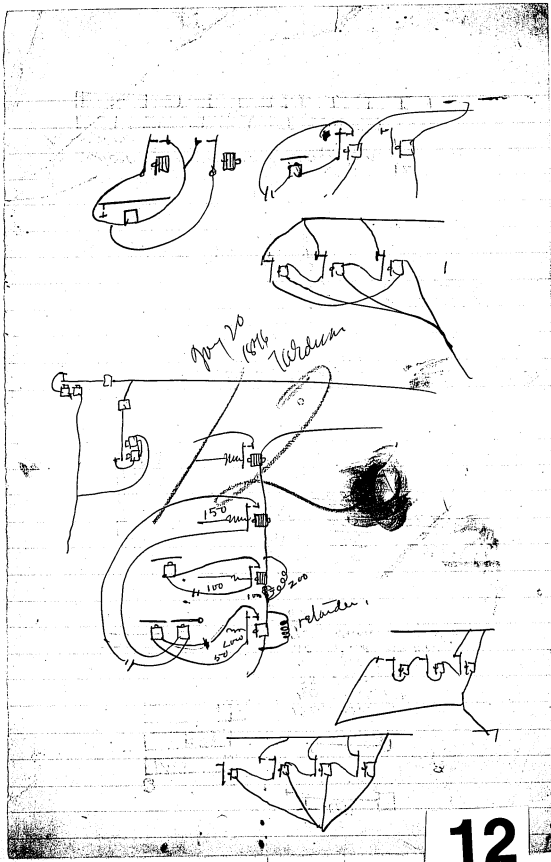
12
3
4
5



Boston
 Boston Boston Boston
 Boston

12
8
12
10



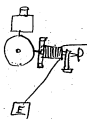


Spoken Telephone

July 17 1877
2d Edition

reproduced slow or fast by a Copyist & written down. This can be applied telegraphically
This

Charles Adams
James Adams



Telegraph mechanism the same as my Walker's machine

Sheet after received is sent to Copyist who passes it in machine similar to that shown on other page & copied at rate of 25 words per minute whereas it was sent at rate of 100 per minute thus saving all skilled operators & 5 persons doing work of 8. Emg might be used instead of magnet to receive it might be done in other ways: hand writing - such a perforating with needle or by a friction ink =



Revolving plate two telegraph tubes =

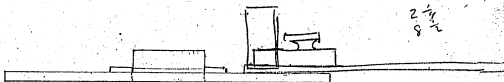
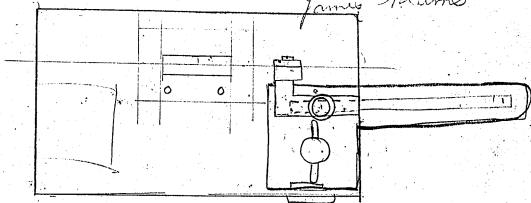
ing Telegraph

July 17 1877

Edison

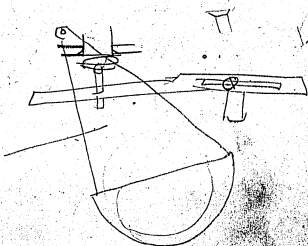
Charles Scheller

James Adams



2 1/2
8

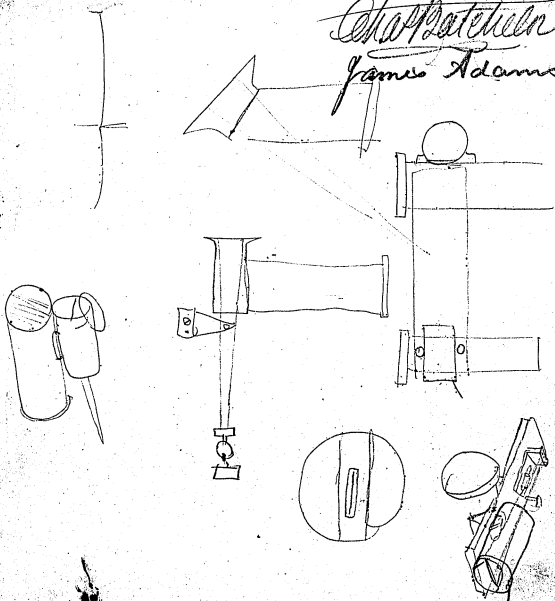
Amperes will
be indicated by
the
17



Edg. Taylor

July 14/1944
Fairfield

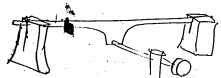
Chap. Patchell
James Adams



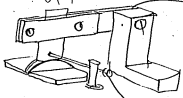
Speaking Telegraph

July 27. 1877

Chas. Matthews
James Adams



Reed



Reed

Wm. J. Gray

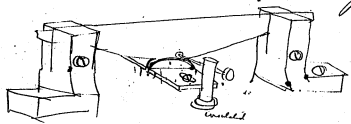
Wm. J. Gray

Glorious = Telephone perfected this morning 5 am = articulation perfect, got 1/4 Calum newspaper every word, had ricketty transmitters at that we are making it solid

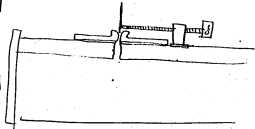
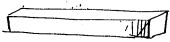
Speaking Telegraph

July 17 1877.

Washburn
James Adams



Vibrating Consonants



Vibration of the oscillation

Physical and Phynes in majestic Mist

Physical and Phynes in majestic Mist
The majestic myth which Physical seek

of Probabilities
Probabilities of Lead.

Vibration

⊙

301

No 44

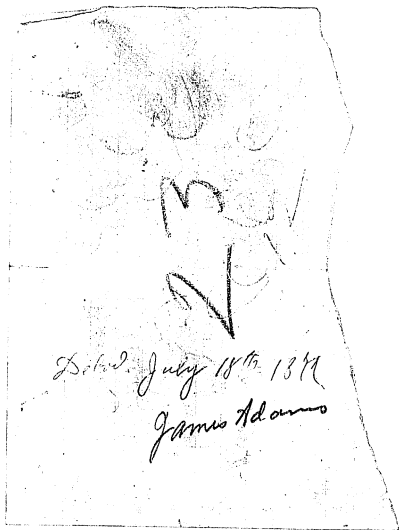
For my EAT of Mineral

Wasson's Month Pinner - new

ring'd draphms - ~~_____~~

Dalsh + Loeger ~~1/2~~ ~~1/2~~ ~~1/2~~ 3

23



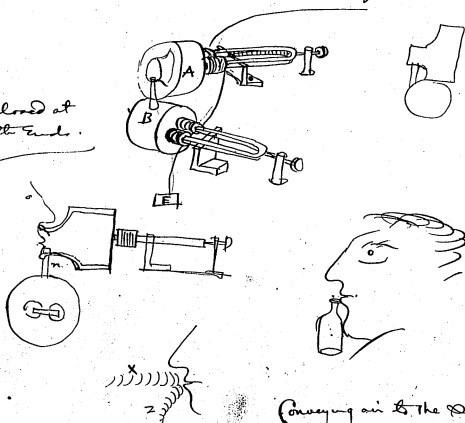
Speaking Telegraph

July 18 1877.

J. Adams
Chas. B. Taylor

Improvement on Bells Magneto Telephone, which improvement
 consists in reinforcing the hissing consonants such as S. T.
 V. P. C. J etc. Thus

James Adams

B is closed at
both ends.

X vocal or vowel vibrations
 Z hissing vibrations

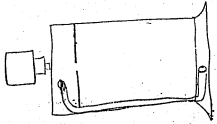
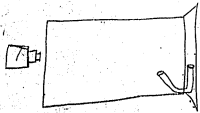
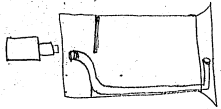
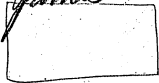
Conveying air to the second
 Telephone through tube
 A in manner shown
 sets diaphragm of B
 in powerful vibration
 at each word sound or
 his the vowel & musical
 sounds be obtained from
 A.

255

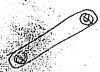
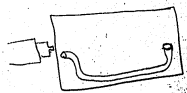
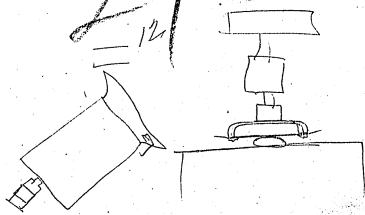
Wright & Sligh

July 20, 1877

Edwin
Chas Mattheis
James Adams



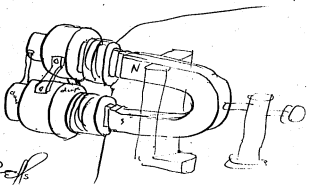
29
= 121



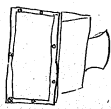
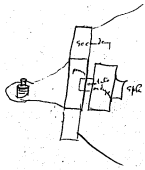
307

Edgy Telegraph

July 20 1877
74 Edin
~~Chas Batcher~~
Adams



Application of
the official tube to Bell's
Magneto Telephone

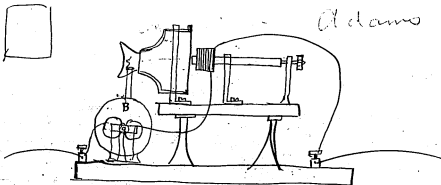


square diaphragm longer than
it wide - applicable to Bell's
magneto

348

July 20 1877

Adams



33

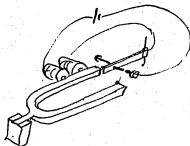
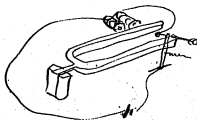
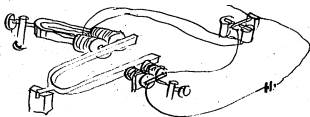
Acoustics

July 20 1899

~~W. D. D. D.~~

Chapman

James Adams



315

substances suitable for diaphragms

- glass
- Mica
- Hard Rubber
- Celluloid
- Cellulose
- Aluminium foil.
- Soft rubber
- Parchment
- Parchment paper
- Cork sheet
- Pith
- Quartz paper: — good for ~~use~~
- Siamma, porous hot malleable material.
- Leather
- Chamois skin
- Clay
- Silk
- Pen Stencil paper
- Rice paper
- Japanese thin paper
- Phelates
- Russian Amalgam
- Ivory
- Birch bark

July 20, 1877

74 Eding

James B. Pitt
Chas. Batchelor

Adams

of 662 272 15/8 7.10.5. 64 of 164 13. 25. (72)

36

2

July 20 1877.

- 39 - Rawhide
- 40 - Pig bladder
- 41 - Fish guts
- 42 - Parchment
- 43 - Flattened horn
- 44 - Five dollar bill
- 45 - Sheet tin
- 46

John Malchuk
James Adams

40

July 20 1877
7115

- Box wood.
- Pine wood
- Krugis Veneering
- Cedar wood
- Cork
- Celluloid
- Collodion
- Card board *diff. sizes*
- Glass
- Mica
- Copper foil
- Tin foil
- Gutta Percha
- Rubber
- Silk
- Gutta Percha covered with Rubber
- Aluminium
- Steel foil
- Brass foil.
- Soft iron foil,
- Paper soaked in various substances
- Chamois skin
- Kid

Adams

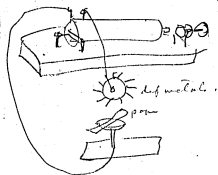
- Patent leather,
- Bladder Skin Coated with varnish
- Hard Rubber
- Ivory
- Sheet Sulphur
- Tin sheet =
- Gelatin Coated =
- Birch Bark
- Deer skin
- Tobacco leaf =
- Leaves soaked - Cellulose residue
- Bone,
- Dried Linseed film -
- Fish skin
- Albuminized paper
- Wire gauze with tissue pp
- Parchment paper
- Bank note paper *sm*
- Papyrograph paper
- Pressed Benzoic acid

Jan 16. 97

July 21 1877

Experiment to obtain a recording
salutem for jump spark for use in
determining rate of burning forbs etc

T A Ed
Chas. Satchler



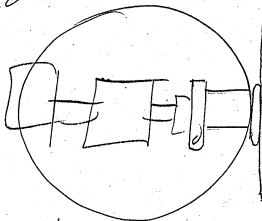
9000 lbs. Palassium 5 grms 10000 NO, platinum jump spk $\frac{1}{8}$ inch
wants a vibrator for exact record fair =
1 grm 10000 Valerianit Ammonia - Thallium on one poles tan yellow mark =
20 grm 10000 Can alum Thallium faint yellow mark =

526

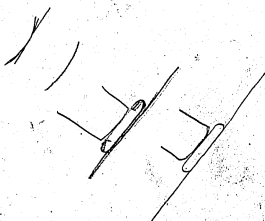
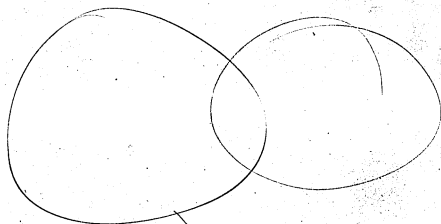
Spky TEL

July 24 1877

708



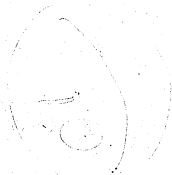
Chas. Patchell
James Adams



327

Spkytel

July 24 (1877)
24 Ed
Chas Batchelder
James Adams



flat def 7. with 10 gms
3 parts Gal. 10
levent 10

41

50

350

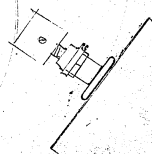
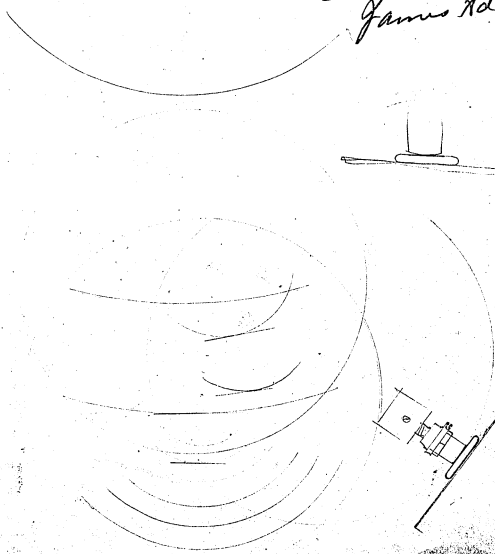
Abigail

July 25 1877

7th

Massachusetts

James Adams



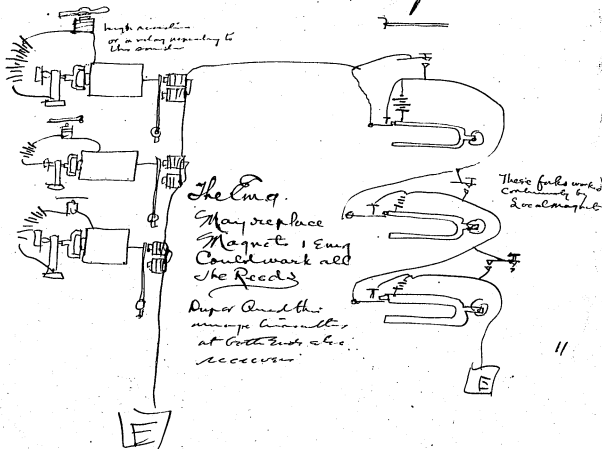
52

Alfred P. Taylor

July 26 1877

T. A. Edison

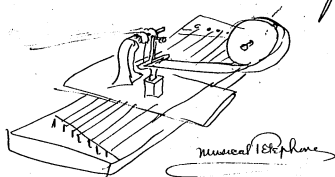
W. H. Pritchard
James Adams



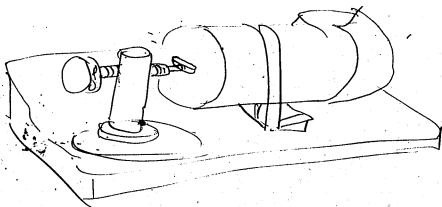
240
Speaking Telgh

July 26 1877

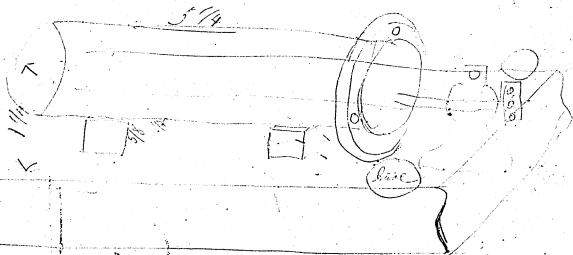
Edison
Wheatstone
James Adams



Musical Telephone



Adams



No 45



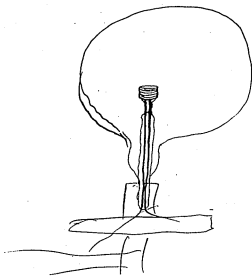
10 =

Del'd July 27th 1877 July 25th 1877

327

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FROM THE LABORATORY OF
T. A. EDISON.
MENLO PARK, N. J.
U. S. A.



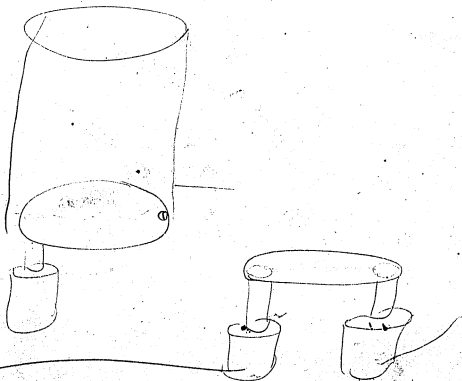
71

308

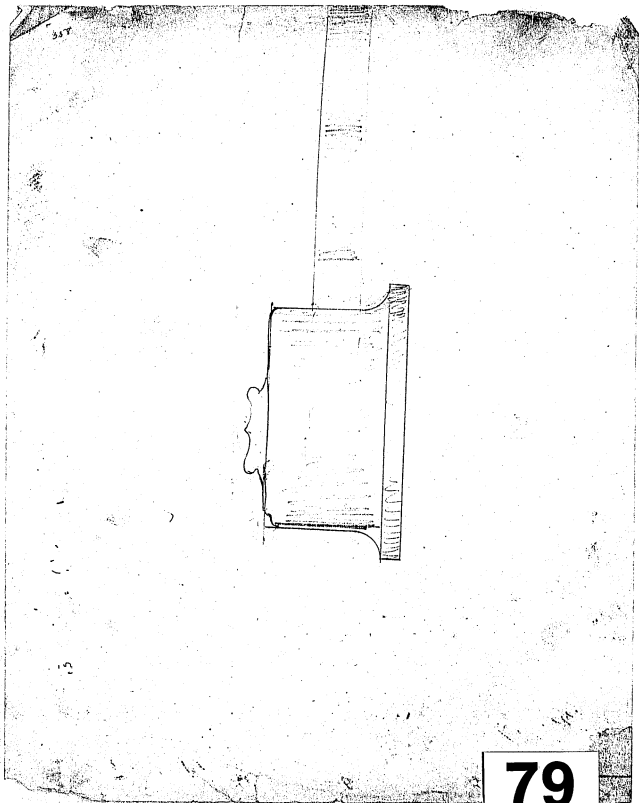
Spencer Bluff

July 28 1877
1715

Chas. B. B. B.
James Adams



75



79

654

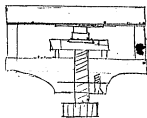
Spicy Blk

July 29
1785 (84)
Edie!

Chas. Batcher
Gas Adams

79

12

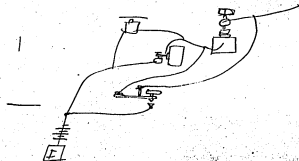
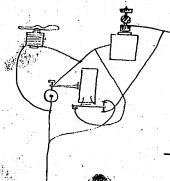
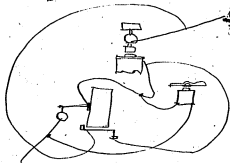
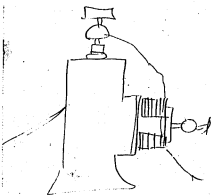
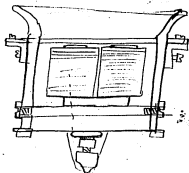
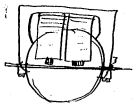


79

Speaking Telegraph

Aug 3 1877
W. A. Adams

Chas. B. Bate
James Adams



207

Spleg Telgl

Aug 6 1877

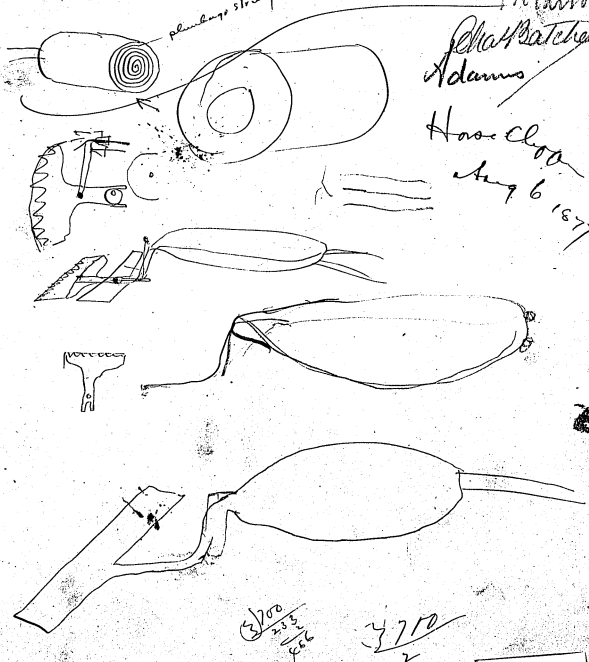
W. H. Adams

John P. Adams

Has. Choo

Aug 6 1877

plumbago string



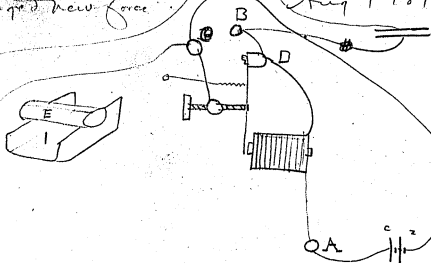
3200
233
1/466

3710
2

89

Parkes alleged new force

Aug 7 1877



all in a line what

Relates
Telephone

only due to Effect Extra Current

Same as I explained with grain or so

976



Telephone

du 9th 1877
7th 1877

Chas. B. Adams
Adams

99



Feb
ab

nest

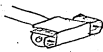
375

Apply Telegram

Aug 10 1877

Malden

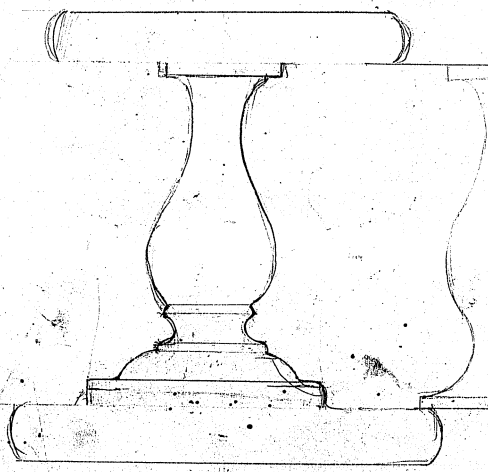
Chapman
Adams



100

Speaking Telegraph
Aug 11th 1847

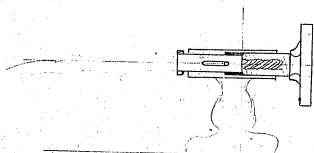
Chas. Bateley



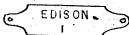
Working Telegraph
Aug 11 1877

2 1/2
2 1/2
2 1/2

Wm. S. Stearns



2 1/2
2 1/2
2 1/2
Adjustment for
Magnet & Hammer
2 1/2
2 1/2
2 1/2
2 1/2



2 1/2
2 1/2

Dr J. A. Edison

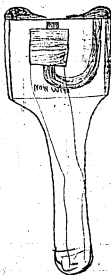


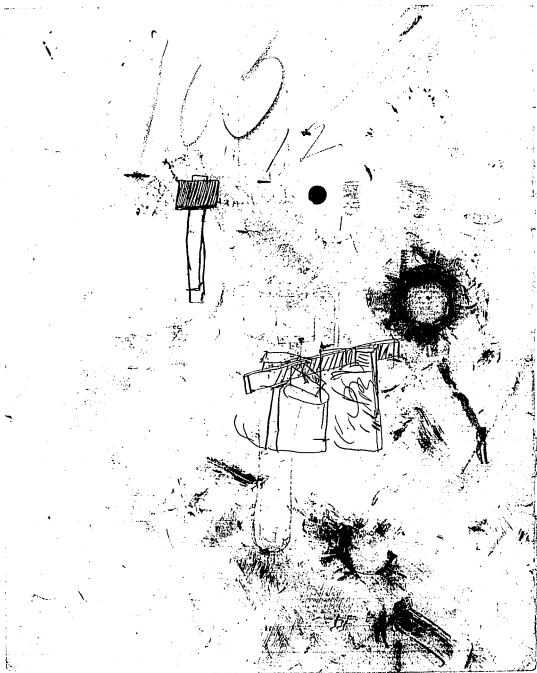
Chas. Batchelor

Johnnie

M. M. Force

two parts, given, Aug 1877





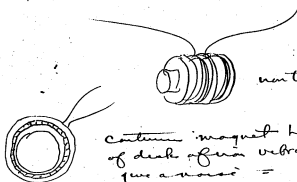
103

Sphy Telegraph

Aug 12 1877

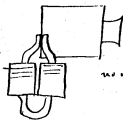
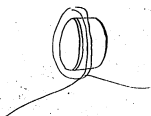
7 added

Chas. Bakewell
James Adams



new tube wound with wire

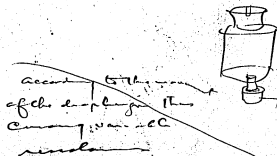
contains magnet having its core formed of disk of iron vibrations cause these to give a noise =



wound of magnet

Inventor here that the conducting fibre can be dispensed with in my telephar & its equivalent substituted (12) the clean fibre may have a semi-conducting substance included in its folds & that will work =

Even loose plumbago or equivalent will work like this



accord to the way of the display the current will all revolve

Loose plago or Mercury or strong rest on a spring on or top of fibre space felt or given substance or it may be mixed with fine light fine wire filaments & a piece of magnet placed a problem this will all work at it back & forward

T. A. EDISON,

Menlo Park, N. J., 1880.

105

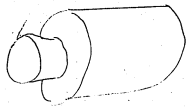
Vac

12

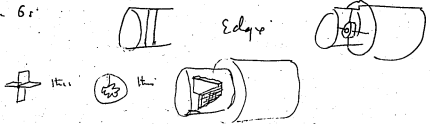
Car 8

Splg 4184

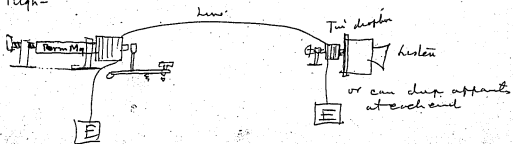
Aug 17 1877
F.A. Adams
Chas. Patchell
James Adams



I find that the B, P, F, & U give wind rushes different from C, G, H, J, S, T, X, Z
The slot in the mouth piece is sufficient from the latter but the other rushes go directly in tube hence I propose to put something in tube having sharp edges to cut the wind which rushes in and not downward like the "sh" it can be:



New Tilgh-



Spkly Blugh

Aug 17 1877

J A Edison
Chas Gatchett

Very apparatus for recording & reproducing
the human voice - I propose using a
paper coated with a substance which becomes
very soft by heat & when cold is firmly
hard like sealing wax,

James Adams

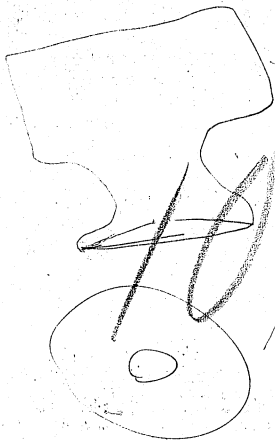
I think a Park diaphragm both for recording
and sending is the best thing we have yet
struck, an account of an absence of harmonics.

Phonograph.

paper is previously embossed and
brought to a knife edge; then the
little point on the diaphragm having
a knife edge only has to indent this edge
which it ought to do very easily.

The edge may be a substance deposited on it
if this embossed edge will work. the speech
may be retransmitted, over a telegraphic
circuit.

Another idea Indent the paper in spiral
grooves or on a long strip cover whole of
paper with tin foil. the point on the diaphragm
will then easily indent -

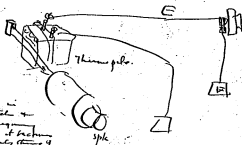
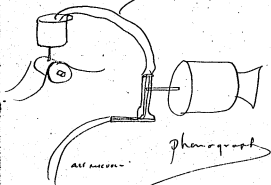


128
E. H. 100

Speaking Telegraph

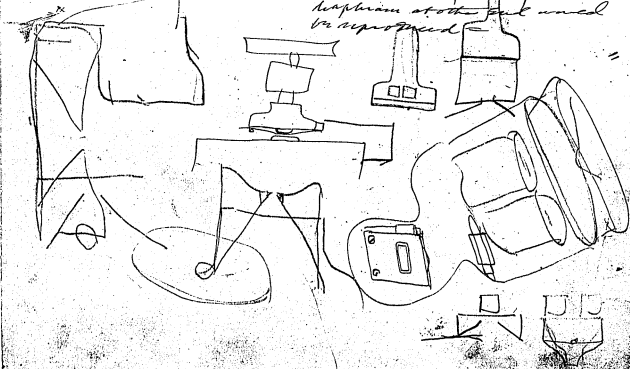
Aug 17 1877
J.A. Casan

Chas. Batchelor
James Adams



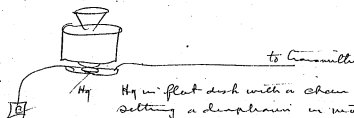
Soft rubber in
spike of steel &
heat & mag.
normal prod. of heat
colder it only thing
knew that does not
necessarily have its
movement of a single
and generate heat waves
of thermopile would generate electric
waves, & these acting in mag. net
explosion at other end would
be reproduced

Boston Boston
Boston Boston

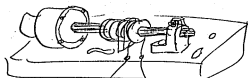


368
Spencer Edgell

Aug 17 1877
Addison
Chas. Batchelor
James Adams



Hg in flat dish with a clean solution. I clean setting a diaphragm in motion by a movement derived from the action of Electrolysis on Mercury.

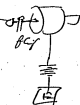
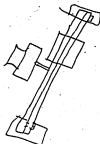
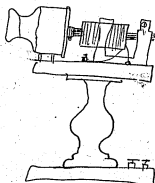


The point work on well

I use the Expansion of the wire coil to work a diaphragm

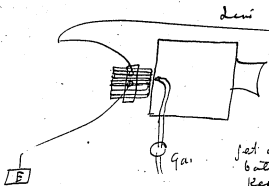


Expansion



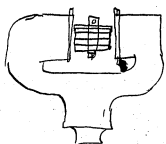
Spoken Telephone

Aug 17 1877
J. A. Edison



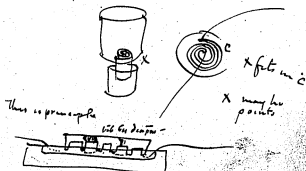
Edison
James Adams

Jet of gas; platinum wire kept hot by battery and many other means keeps the metallic diaphragm hot this vibrates in close proximity to an exceedingly delicate thin wire pivoted to the Lini, perhaps something cool at the other end would be good



both diaphragms kept hot or one kept hot other cold or can use two diaphragms but one is always naturally colder than the other

H.O



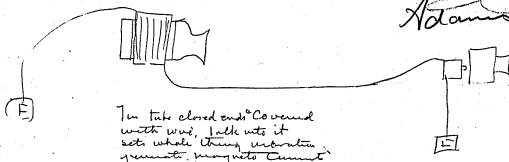
Spk's Blgh

Aug 17 1879

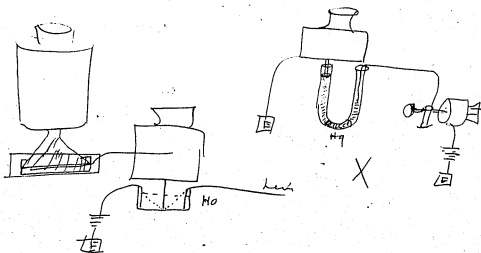
J. Adams

Chas. Pfeiffer
Adams

|||||



Thin tube closed ends Covered with wax, falls into it sets whole thing vibrating prevents magnetic current



X is an attempt to use the capillary movement of mercury to work a diaphragm.

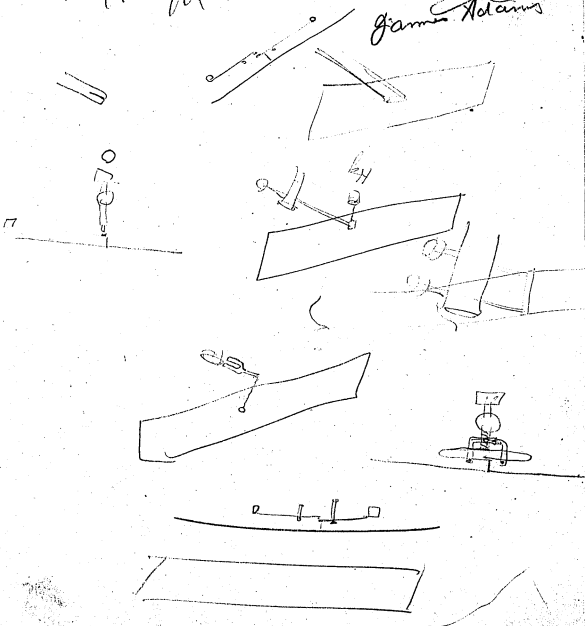
if ethal fluid works good by pressure makes the whole



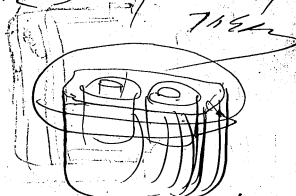
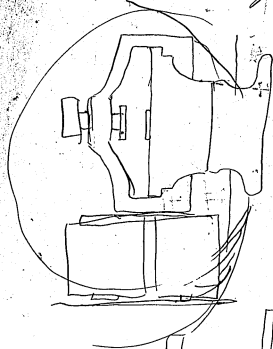
fig. 114

Opolytelig

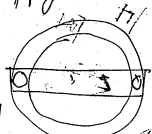
Aug 21 1877
24 2/2
Otho Balafout
James Adams



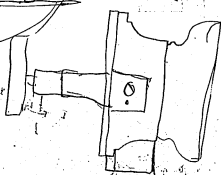
Spkg Blumhoff Aug 24 1877
718



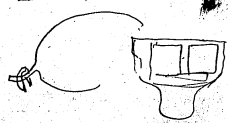
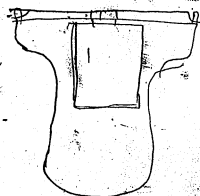
James Adams



Chas Batchela



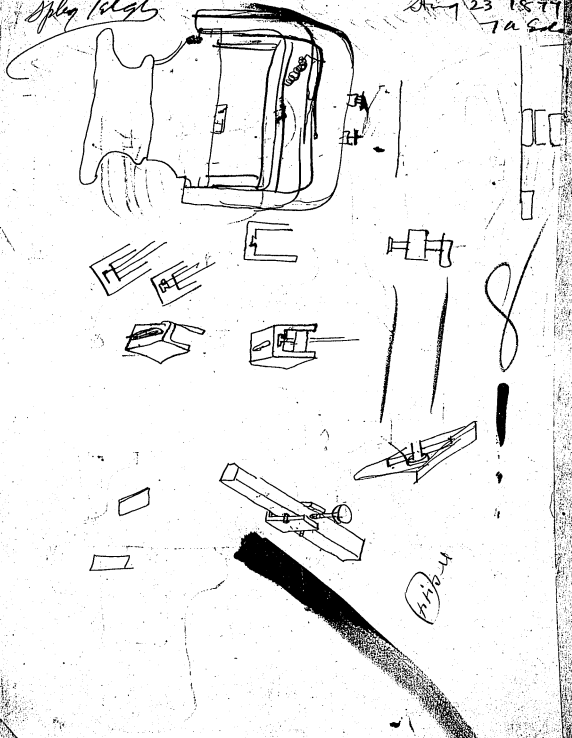
105



118
12

Spiny Tule

Aug 23 1877
7A 50

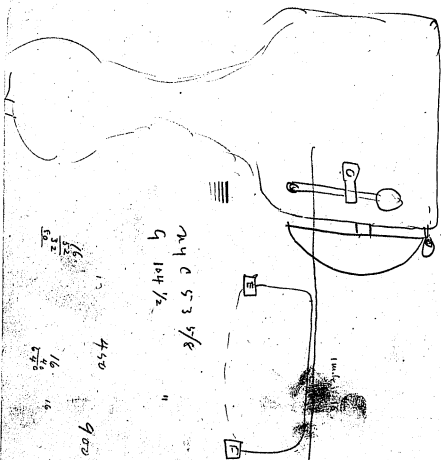


W. H. B. M.

4010
Speaking telegraph

August 24th 1877

Chas. B. Kipfer
James Adams



7e

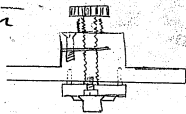
120

Working telegraph

Aug 24th

1877

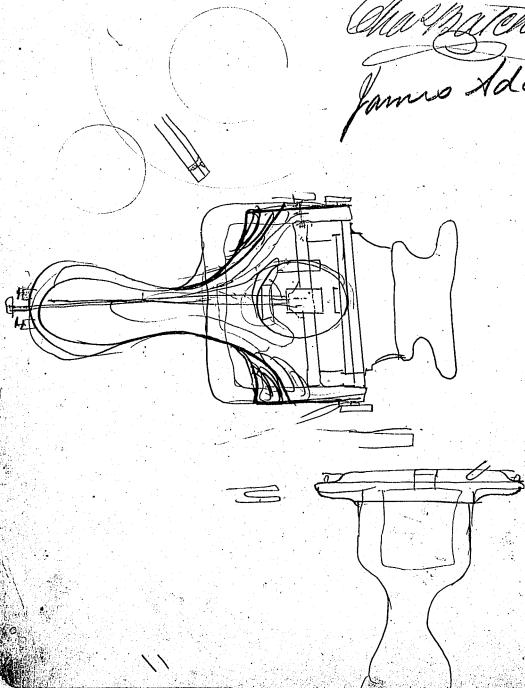
Charles
Adams



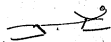
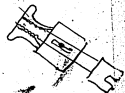
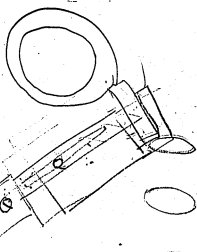
Speaking telegraph

Aug. 24 1847

Chas. B. Patchell
James Adams



32
are



Spiegelberg

Aug 24 1897

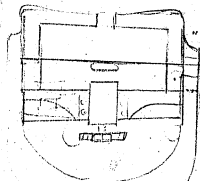
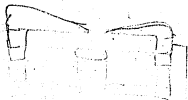
Table

Chas. B. Nichols

126



m
B



15

12

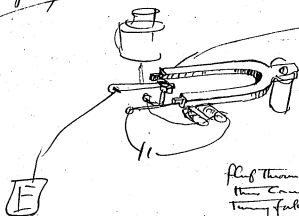
126

1106
Eplg Blagumoff

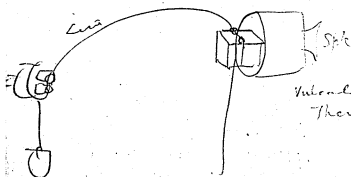
Aug 25 1877

74 Ed

Chas. Baletto
James Holman



Plug them in & out by a diaphragm
the causing was a less pressure
they fall under 2 or 3000 psi second



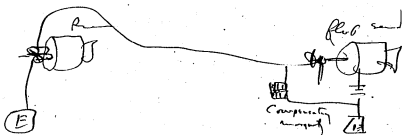
Internal diaphragm
Thermopile,

403
Speaking Telegraph

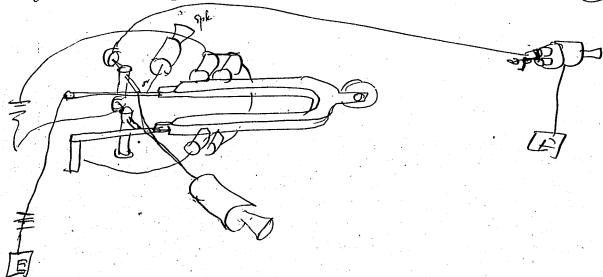
Aug 25 - 1877

Talbot
Chattanooga

Use a receiving diaphragm or plate composed
of a large number of thin iron sheets or plates
this will stop harmonics

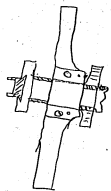


feed a number of telephone wires out of one battery.



Spkg Peter

Aug 30 1877
J.A. [unclear]



Gas Adams

100.

165 165

17000

376 2990

6

165 165

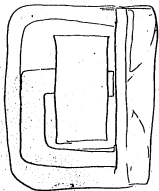
10

170

115

355

Chas. [unclear]



Improvement on Wells
Telegraph, the electromagnet being
placed by the other
End of the permanent magnet

T. A. EDISON.

Menlo Park, N. J., 1880.

Doc 12

136

Dec 8

James Adams

Aug 30 1877

7a E.C.



Okal Pachelor



James Adams



James Adams Pasha

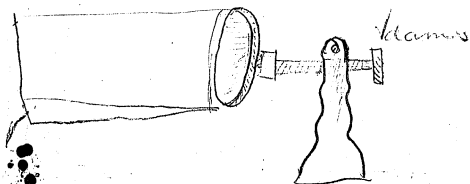


James Adams Pasha

James Adams Pasha

James Adams Pasha

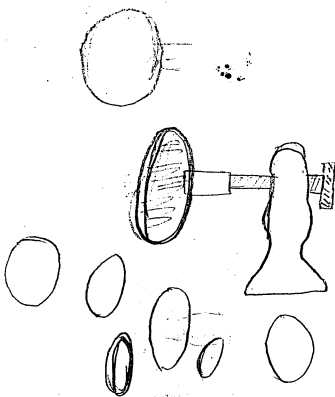
Speaking telegraph Sept-2^d 1877



use fluf x Plate full size of
Saphire in water Hard substance
being extending out over the disk
- say $\frac{1}{4}$ inch
to you will get the Vibration
of the diaphragm at all points.

Speaking telegraph

Sept. 2^d 1877

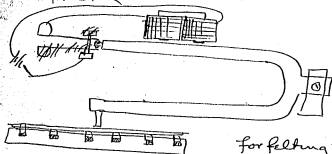


Speaking Telegraph

September 7 1877

Salvacion

Robert Bachelor



for felting the silk into washers
or disks by many thousand
taps of a tuning fork

M.

Sept 10 1877
Salvacion
Robert Bachelor

Speaking telegraph.

Sept 8. 1877

3rd Edition

Charles Batchelor

James Adams

I propose to cover the fibre with metals by the process

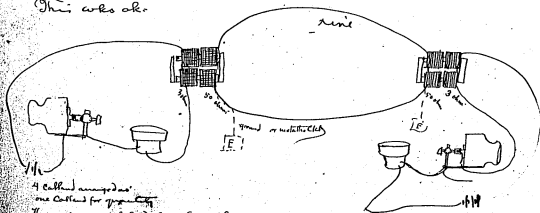
described in the September number of the American Journal of arts and science Vol XIV, New Haven 1877 = page 169 to 178, this will

get rid of the effect of the acids used with the phosphorus plan

I find that by my small coil it can be done to a certain extent but it will require a larger one to do it well,

This works also

working by induction



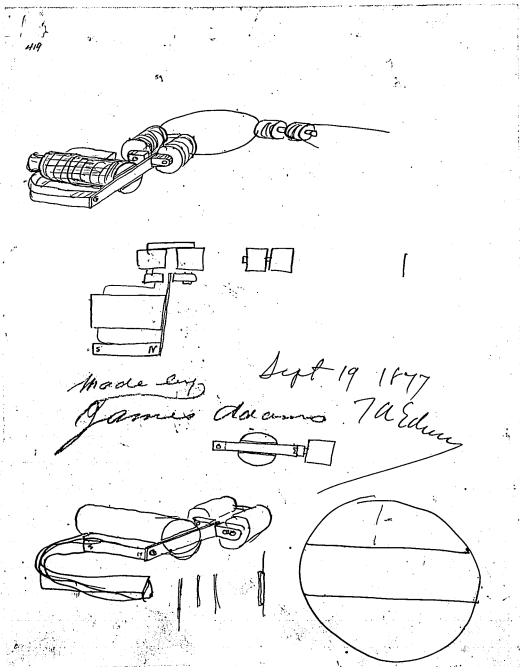
4 cells arranged
one called for quantity
The resistance of metallic fibre brought
down to 10 ohms

447
Speaking Telegraph

Sept 17 1877

I find that a large number of silk-plum bagged disks say 8 or 10 hard
pressed make speaking painfully loud and it may be so
adjusted as to be very sensitive, diameter placed
2 feet from speaker conversation can be carried
out and I have no doubt but if a very
sensitive Receiving instrument was used that
the voice of the speaker in any part of the
Senate or House Chamber could always
be transmitted to a distance providing the
telephone was placed permanently on the
speaker disks

I propose to dampen the diaphragm in a Bell
telephone by strips of rubber stretched over
them - this will prevent Harmonical
sounds



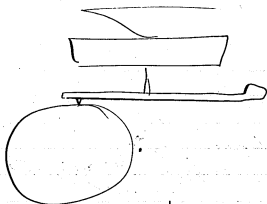
Made by
James Adams 7A Edison
Sept 19 1877

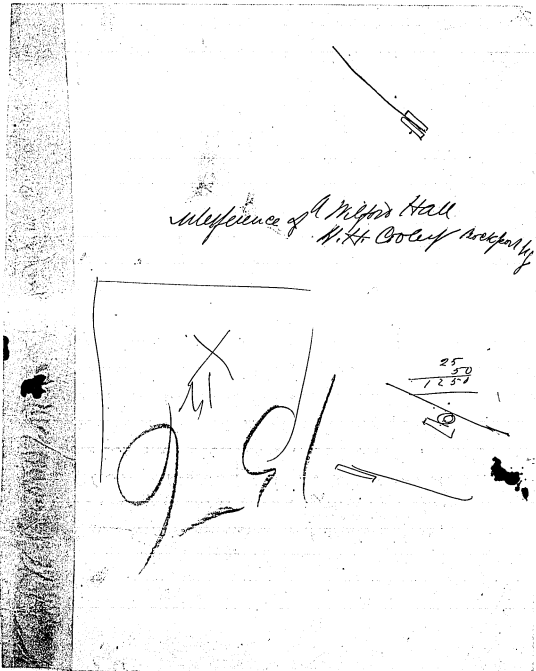
The invention ^{or patent application} was conceived about the middle of September 1877,
 and was reduced to practice ^{about the same time}. Several forms
 of levers intervening between the recording
 point & the diaphragm were tried,
~~some~~ and used and publicly exhibited,
 about that time, and I have

Drawing by 2-78



Sept 19 1877.





reference of A. M. Hall
W. H. Coley

156

1121

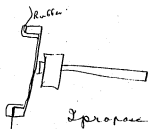
Speaking Telegraph

Sept 20 1877

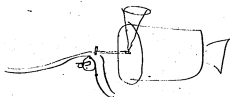
J.A. Edison

Chas. Bakewell

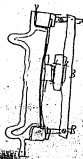
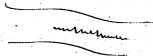
James Adams



I propose to patent the rubber diaphragm
 in connection with the Ball P Telephone diaphragm
 right of G



Diaphragm



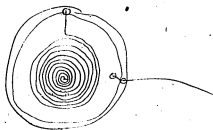
426
Speaking Telegraph

Sept 20 1877

J. O. Edison



James Adams



T. A. EDISON.

Menlo Park, N. J.

1880.

Vol 12 - 164

Blake County
Oct 9

Vol 12

164

Shawnee

inter

no 1 no 10
no 2 no 4
11

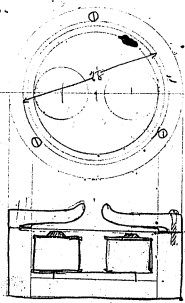
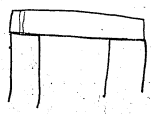
Speaking Telegraph

Sept 21st 1847

Chas. B. Atchison



Made ~~can~~ Mandrel for making wire ferris



Trapezoidal

o

Sept of box $\frac{3}{4}$

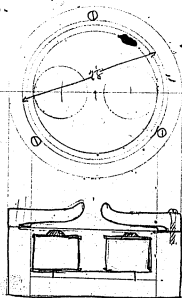
Speaking Telegraph

Sept 21st 1897

Chas. K. Nichols



made ~~em~~
Mandrel for making wire plugs



Lithragin

depth of box $\frac{3}{4}$

169

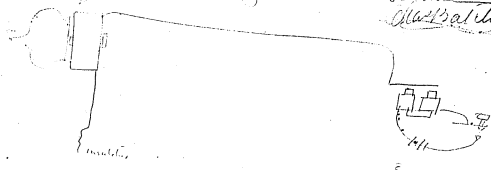
Call:

Ethnic group

Sept 21 1947

SAD

BlackBerry



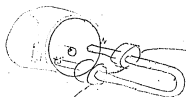
Track

Opky 1149991

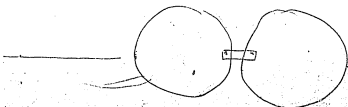
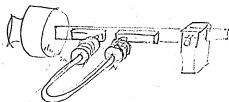
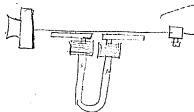
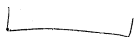
Sept 1895 - 21

JA Edison

Chas. B. Atcheta



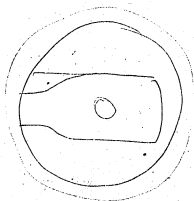
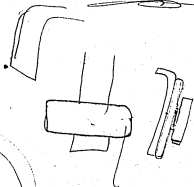
See description of (cable) & (part) in my notes. Edgwood
6-2-95



Spring Trough

Sept 28 1877

J. C. Edison
Charleston



T. A. EDISON,

Menlo Park, N. J., 1880.

No 188 Vol. 12 Sept. 30/77
Interference Chimney

Notebook, Volume 13

This volume covers the period October-December 1877. The notes and drawings are by Edison, Charles Batchelor, and James Adams and relate to the speaking telegraph and telephone. The volume consists of 204 numbered, unbound leaves.

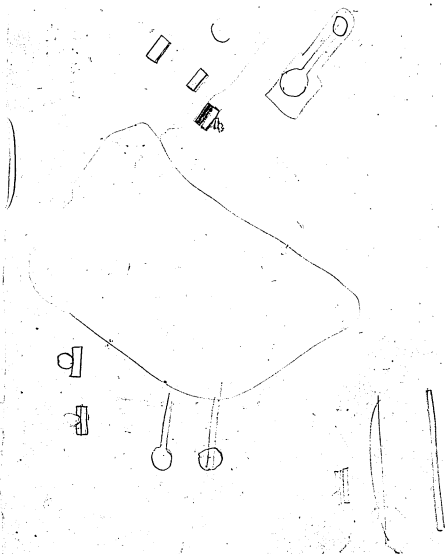
There is also a drawing of the phonograph, dated November 29, 1877, which contains the page/volume inscription "154/13" and which may have been considered part of this volume. This drawing, which some scholars think was used by John Kruesi to construct the first phonograph, has been filmed with other early phonograph drawings in NS-77-003, Unbound Notes and Drawings.

Missing pages, found in facsimile in the Telephone Interferences: 1-2, 4-10, 12-13, 15-34, 36-43, 45-48, 50-51, 53-55, 57, 60-65, 67-77, 79-80, 82, 84, 86, 89-91, 93-96, 98-100, 102-106, 108, 110, 112, 114-117, 119-121, 124-128, 130-133, 136-141, 143, 147-153, 155, 158-169, 175-177, 179-180, 202-203.

Missing pages: 3, 11, 14, 44.

Manning Telegraph

Oct 22 1877



April 11 Nov 1 1977

7a Edm →

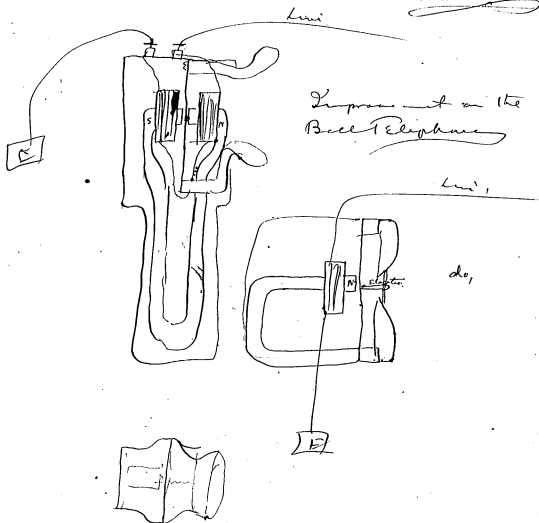


1189

Speaking Telegraph

Nov 1 1877
T. A. Edison

Chas. Batchelor



T. A. EDISON.

Memo Park, N. J., 1880.

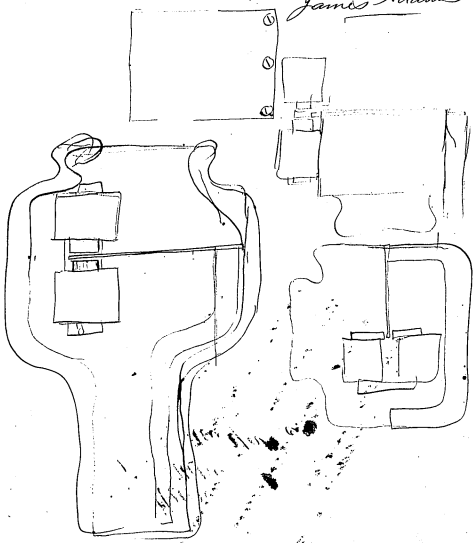
Vol 13. P. 53
Berkeley
Oct 4

492

Speaking Telegraph

Nov 5th 1899
J. Adams

James Adams



56

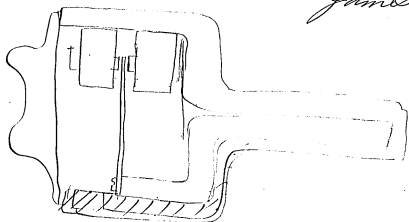
1894

Speaking Telephone

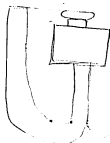
Nov 5 1877

J. A. Adams

James Adams



No 2.



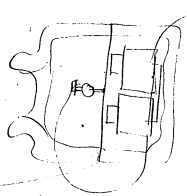
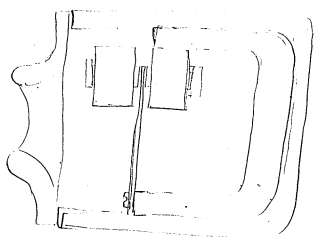
58

195

My Response

Nov 5- 1877
70 Edison

James Adams



No 3.

(E)

very high water action & by some being

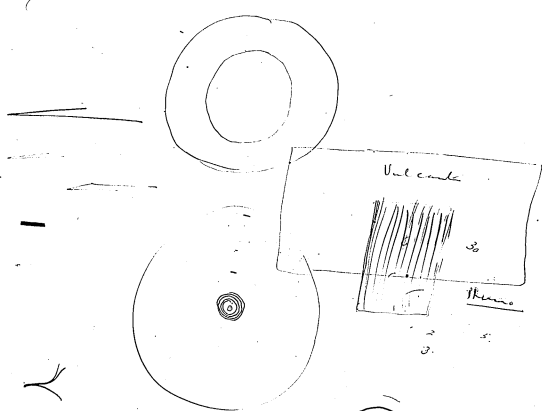
503

Speaking Pledge

Nov 5 1877

TASHM

Chas. Satchel



6	6	6	6	6
40	35	30	25	20
				5

66

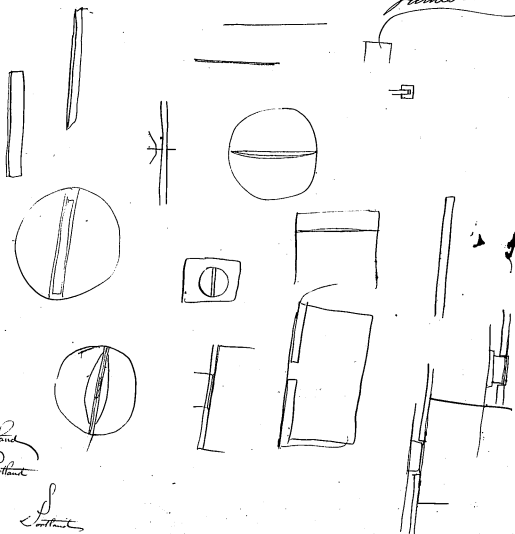
Working Telephone

Nov 10 1877

3rd Floor

Chas. Batchelor

James Adams



Portland
Portland

S
Portland

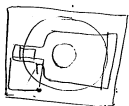
Spieg Telephone

Nov. 10 1877

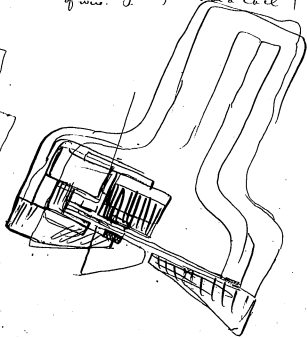
7 Alden

Chas. Ketchum

James Adams



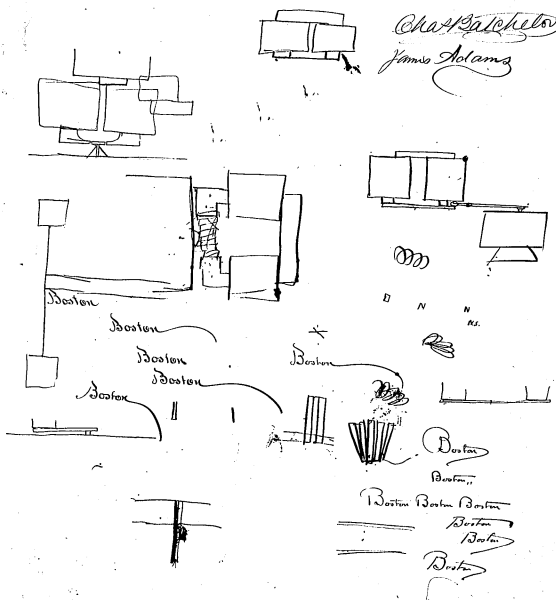
Steel plate hardened & permanently
magnetized - placed in a coil
of wire.



1834 Telephone

Nov. 10, 1877

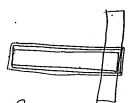
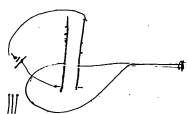
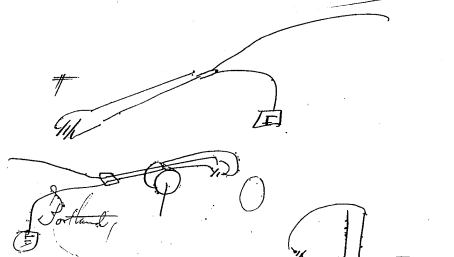
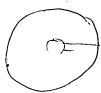
Chas. Batchelor
James Adams



Spleg Trough

Nov 10 1877

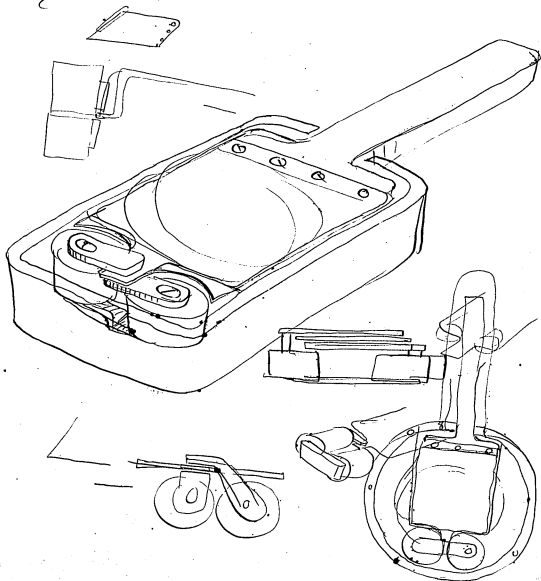
7A Edm



Portland
Portland Portland Portland

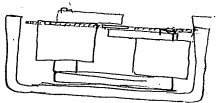
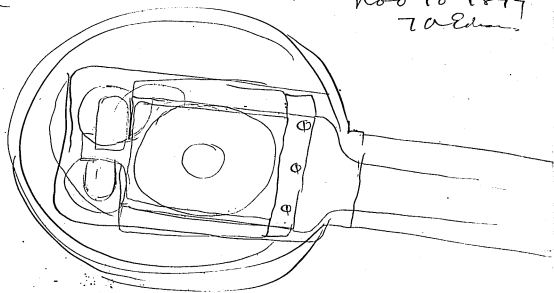
Spleen Tray

Nov 10 1877
7a Edison



Steel

Nov 10 1877
T. A. Edison

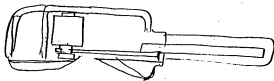
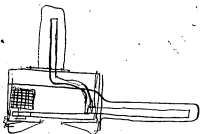
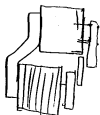
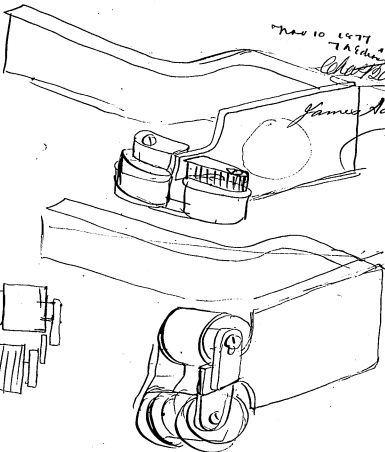


Apply Telegraph

THE 10 1877
7 A Side

W. H. Hatcher

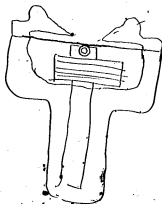
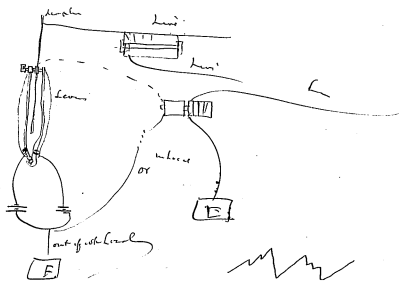
James Adams



W. B. Peckham's Telegraph

Nov 12 1847

J. Peckham

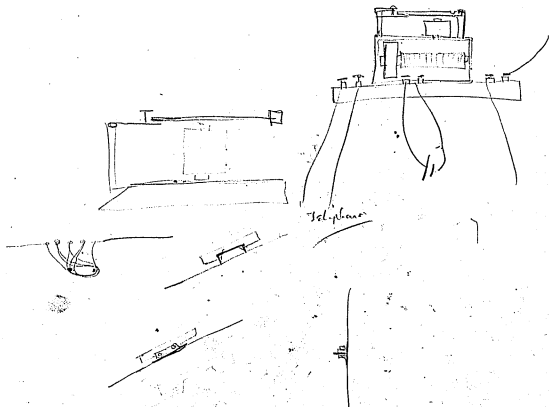


Bell.
 Input in articulation
 Lamp and diaphragm
 Reeds striking in end of
 penning

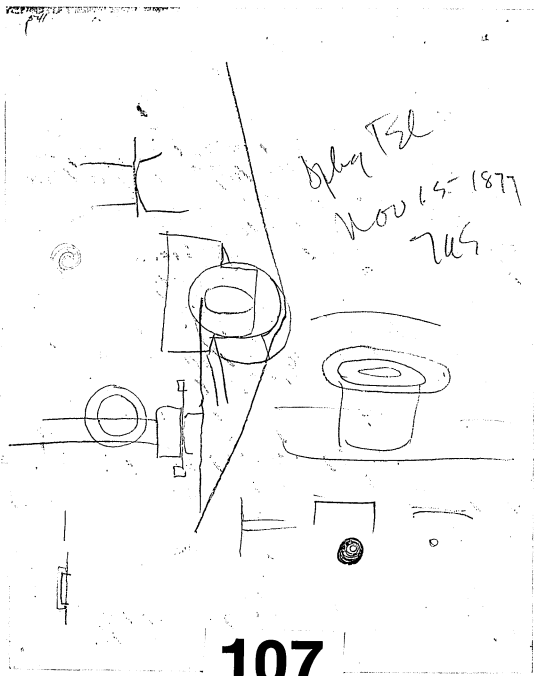
133

D'plog Ruyter

Nov 12 1877
70 Edm

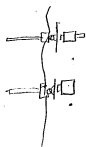


101



new 2000
Spky Telephone -

Nov 6 1977
TaEd



not good. Idea was to get rid of station between
↳ telephone wires



5-16
Br R. q. T. Eligh

Nov. 16. 1877
7a Essex

Found that in Bell's telephones a Copper or Mica
diaphragm could be used in transmission
in place of iron. Whence how does
it work depends upon the fact except
that the vibration of diaphragm
disturbs the molecular qualities
of the permanent magnet hence
currents = we are now making
a number of experiments to devise
a telephone based on the molecular
disturbance of a permanent mag.
(electromagnet). We find
that words spoken in a Bell
telephone is received with $\frac{1}{2}$
the loudness of the Copper
diaphragm apparatus that
they would if there was an
iron diaphragm = this is a
new discovery - the air - hence
patentable & gets clear of Bell's objections

Apple Tree

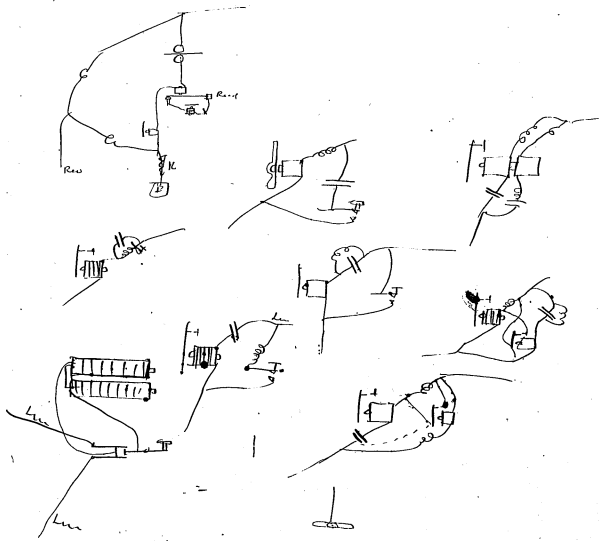
Nov 16 1877
T. A. S. S. S.



113

Coushe-Morse

Nov 19 1877
J.A. Edison



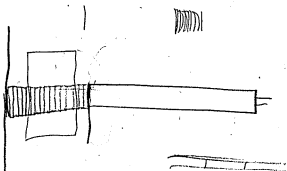
553

Splig K. E. gh

Nov 20 1877

76 Ed

Chas. B. Batcher



122

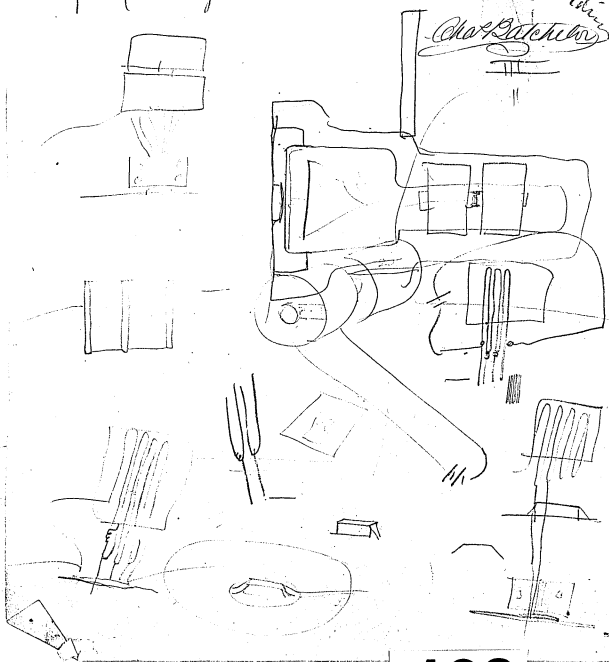
554

Spiegel Tisch

Nov 20 1977

7th Edition

Chas. B. Batcher



123

10 Cell Worst battery

Put up Nov 21 1897 Chas Batcher

Tests Bradley Galv No 27

1897		1	2	3	4
Nov 21 st	10 AM	49	67	28	4
	4 PM	79	67	28	4

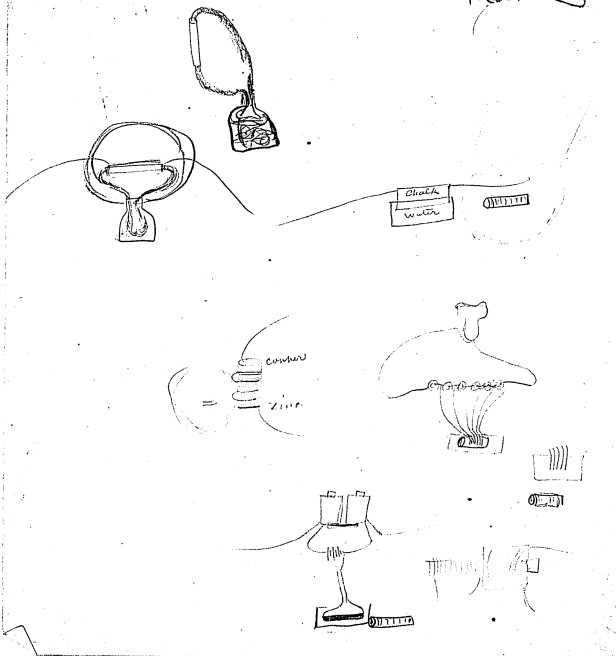
this was on short circuit

Nov 21 st	4 PM	put on 2000 ohms	Steady		
		1	2	3	4
		43	16	3	2

Speaking telegraph

Nov. 22 1877

Adams

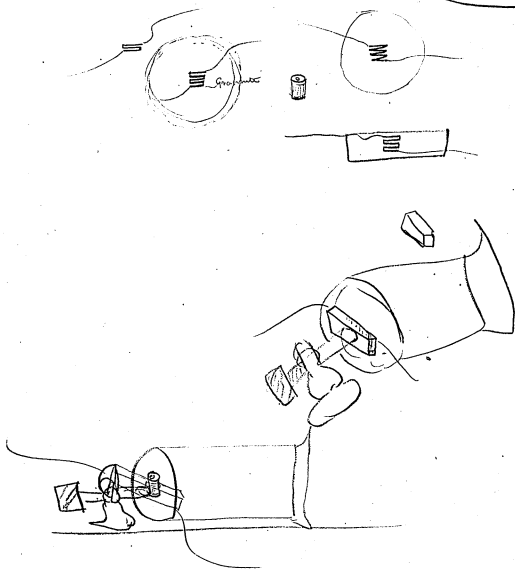


129 1
4

Speaking telegraph

Nov 22^d 1877

Edison

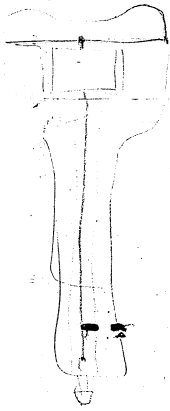
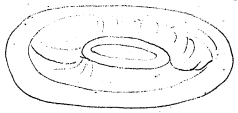
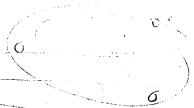
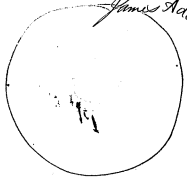


129 1
2

Apkg Tsef

Nov 28
1877

James Adams
765 King



11.5

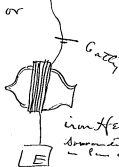
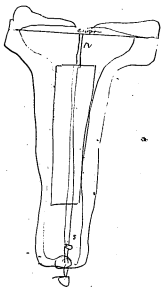
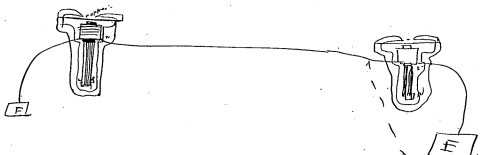
167

Spky Reyle

Nov 23 1877

7 u Edison

Chas Batchelor

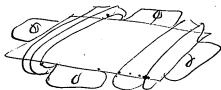
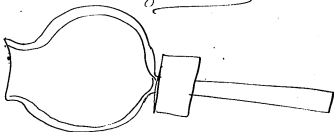


iron Hensley Reuleaux
downward curved wire
- in ckt.

Speaking Telegraph

Nov. 23, 1877
J. Edison

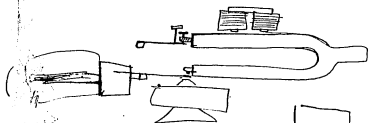
Hand of resonator



Experimenting Telegraph

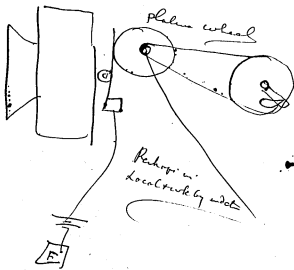
Nov 24 1877

J. A. Edison



$\frac{60}{20}$
1200.

$\frac{150}{30}$
7500



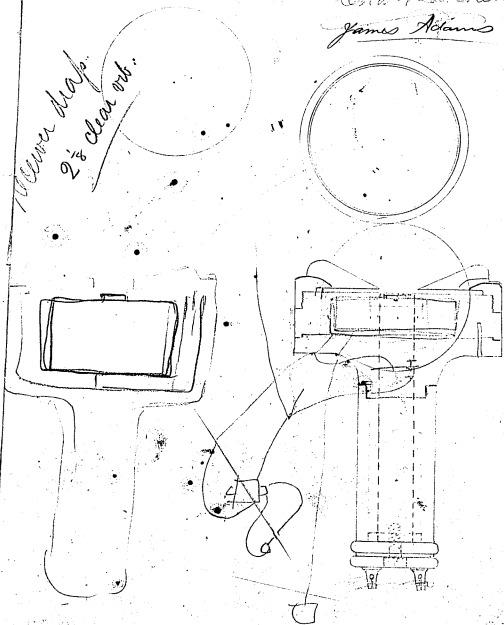
Ring Telegraph

Nov. 24 1877

Wm. D. Hatchers

James Adams

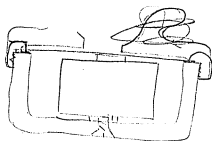
100 mm dia.
2 1/8" clear out.



Haley T Skingle

Nov 25 1877

709

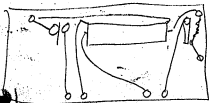
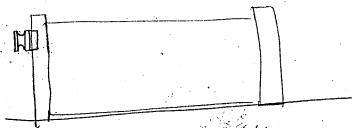
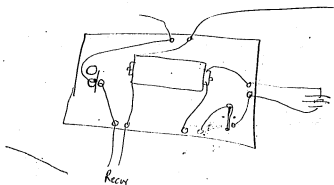


146

⁵⁶⁵ Speaking telegraph

Nov 29 1877

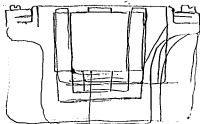
Chas. B. Batschels



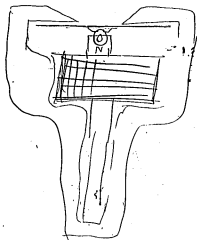
156

Specimen 18, 9 1/2

Nov 29 1877
J. A. S. Co.
Chas. Batchelor



No. 18



597

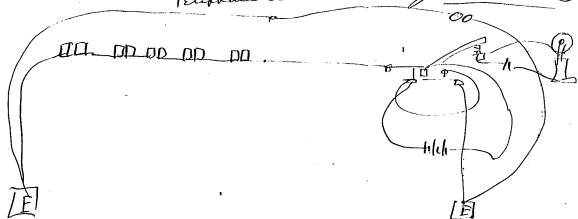
CompuSator

Dec 7 1977

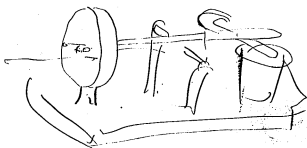
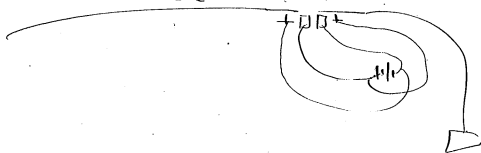
7a Edeca

James Holmes

Telephone wire



Line



170

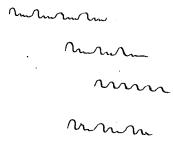
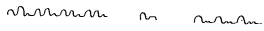
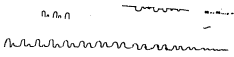
596

Compensation

Dec 7 1877
J Adams
James Adams



11



171

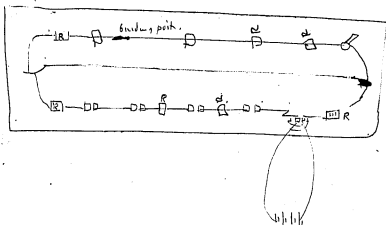
599

Compensation

Dec 7 1877

7th Edition

James Adams



172

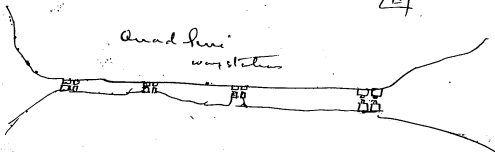
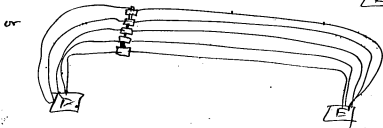
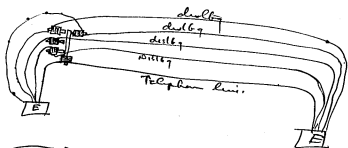
Compensation.

No 026 1877

Dec 7 1877

J A Edison

I propose to carry out this principle
of Compensation in telegraphs of all
kinds, If 4 lines disturb a particular
one I use it thus

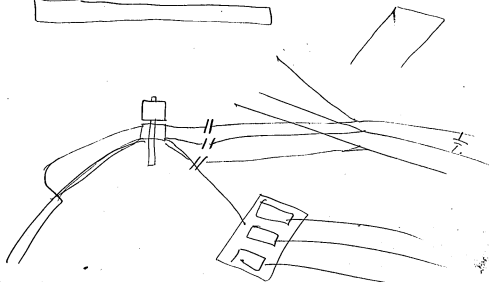
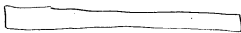
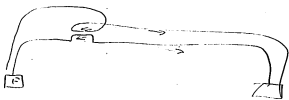


600
Composition

Dec 7 1877

7th Edition

James Adams



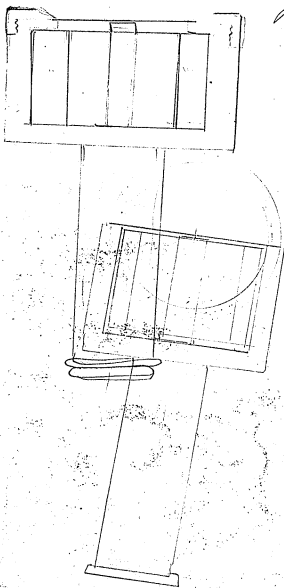
174

602

Seating telegraph.

Dec 14 1877

(Chas. B. Welch)
James Adams



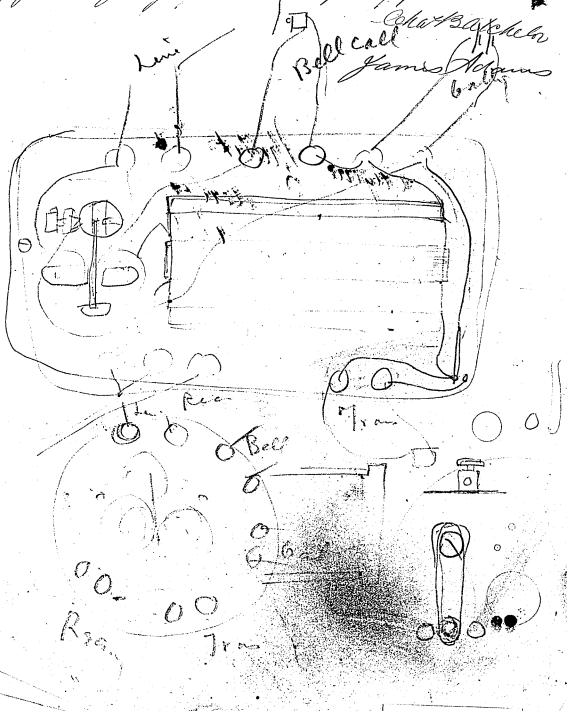
178

605

Speaking telegraph

Dec 10th 1877

Chas B. B. B. B.
James Adams
Baker

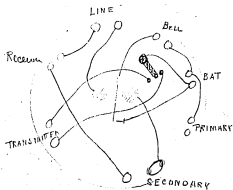
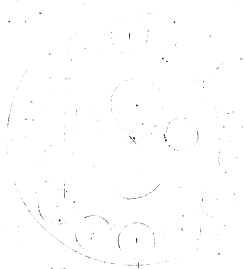


606

Speaking Telegraph

Dec 20th 1877

Chas Batchelor
James Adams

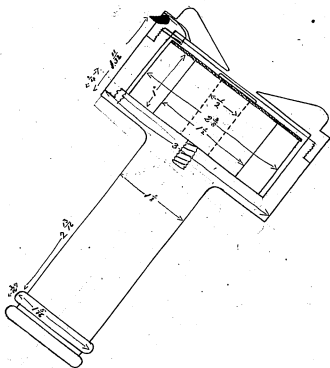


607

Feeling Telegraph

Doc 201

Chas. B. Schellor
James Adams



Inner spool 140 rhms
outside spool cross
wire to make up size

183

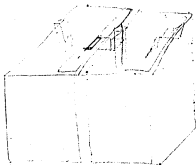
620

Miller

Dec 20, 1877

70 Alley

James Adams



15.

15.



609

Test of Batteries for Speaking Tel. Dec 20 1897.

James Adams

No 1.

1135 am = Watson, 2 minutes after pulling up 1 cell works

Bunnell sounds fairly -

on No 4 strip of Bunnell gal gives def $9\frac{1}{4}$

" " 3 _____ 50 $\frac{1}{4}$

" " 2 _____ 59

" " 1 _____ 63

short circuit = No Zinc in plate

No 2

1143 am Watson

No 4 strip _____ 13

No 3 _____ 60

No 2 _____ 62

No 1 _____ 65-

Works Bunnell sounds somewhat stronger than No 1. and sufficiently for a majority of ~~my~~ officers -

short circuit -

Gally list

Dec 20. 77.

James Adams

Nos 1-4 2 Watson Together water counter
will all the strength required for squally

No 4 stamp	12
No 3	62
No 2	74
No 1	78

Connected for intensity + short child at 1152 ¹⁰⁰⁰
 in No 2 water the blue got in Lumber with zinc but not in No. 1.
 That may account for lower intensity of No 3. blue 1 inch for zinc in No 1

1154

de-facto source Run 4 Manglaran only =

No 4 stamp	23
No 3	72
No 2	70
No 1	72 $\frac{1}{2}$

On No 4 spring runs from 21 down to 17 in
25 seconds from 17 to 16 in one minute -
from 16 to 15 in $2\frac{1}{2}$ minutes

Opening circuit 1 minute it goes to 17 $\frac{1}{2}$
+ falls to 16 in 5 seconds

after this I put it to No 3 coil - goes
to 64 - goes to 62 $\frac{1}{2}$ in 2 minutes - from 62 $\frac{1}{2}$
to 61 $\frac{3}{4}$ in 2 minutes

On No 3 Coil goes to 62 recovers on the coil
to 63 $\frac{1}{4}$ - in $2\frac{1}{2}$ minutes goes to 64 in 2 minutes
more = Resistor of this coil 30 ohms

works a Dunnell's under Chargeur chain
1 water but not quite as strong as 2 water.
Palays slightly on Dunnell in 2 minutes
I adjusted it up high so it would just work in
2 minutes. I was compelled to give a pulse
not $\frac{1}{2}$ a turn to get it to work again
in 2 minutes more I had to give $\frac{1}{3}$
of a turn to get it to work in 2 minutes more
no adjusting necessary -

Continued.

I think this would be a satisfactory local if the sounder had a resistor equal to No 2 coil (~~get R of No 2 coil~~) if it would not then pblly polarize.
 It occurs to me that ~~there is a point~~ this element does not polarize when furnishing a certain volume of current but any attempt to ~~get~~ obtain a greater amount causes polarization as the means for preventing polarization is insufficient to prevent it when to great a volume is attempted to be forced from it by low ~~into~~ external resistance.

Putting the coil on No 4 goes to $11\frac{1}{2}$ ohms, that it has gradually polarized during the experiment in 1 minute it goes to $10\frac{3}{4}$ -

on No. 2 it goes to $5\frac{1}{2}$ & recovers to 60 in 12 seconds & gradually goes up shaking down and naturally depolarize or strengthens current -

Continued

No 2 Peclanchi goes to 13 on No 4

on No 3

61

No 2

66. + goes up

No 1

70 3/4

on No 4 palanga from 13 to 11 in 28 seconds
 from 11 to 10 in 1 minute, after the polga
 slightly =

on No 2 coil goes to 62 & recovers to 63 in 12 seconds
 & goes to 64 in 1 1/2 minutes =

works a Bunnell sounder like the other =
 the 2 together work. Sounder better than the
 2 w/ each other & makes good local =

on No 4 goes to

10. polgs to ~~4~~¹⁴ in 15-

seconds. to 13 in 30 seconds - to 12 in 1 1/2
 minutes =

No 3 coil goes to 61 & recovers to 62 in 15No 2 coil " " 73 1/2 & recovers =

Shut clock for intensity =

12.40. PM =

Continued -

Fuller battery. on No 1 1/2 Carbon with
Credited 4 hours zinc in porous pot zinc 1/4 inch
thick 2 inch wide + 5 1/2 inch long
SO₃ spoonful in porous pot with ^{1 inch} Mercury in
contact with zinc = 4g rather impure (grey)
loaded with zinc = 4 porous pots full mod strong Electrolyte
in each cell

No 4 strap	82 1/2
No 3 -	90
No 2	78 1/2
No 1	79

No 2. 5 full	
No 4 strap	56
No 3	90
No 2	56 1/2
No 1	56 1/4

Corrected for quantity & short circuited
at 12:50 PM

Continued

NO. 1.

The Regular Leclanche porous pot.

No. 4. ^{sh}_____ 57.
polarize to 55 in 1 minute -

No 3 _____ 84 $\frac{1}{4}$.
dnt polarize in one minute.

No 2 - _____ ~~81 $\frac{1}{2}$~~ 82 $\frac{1}{2}$ " "
No 1 _____ ~~81 $\frac{1}{2}$~~ 82 $\frac{1}{2}$ " "

Woke a Bunnell very strongly almost equal to
Carbon - Cant adjust so high but what it will
wake.

Put it back on No 4 set up 55 =

sketches

Resistor galvanometer

- No 4 Nil
- No 3 1 ohm
- No 2 30 ohms
- No 1 150 "

Continued

Leclanche Cell -

Iron shot created 12 mins. stood at 44 on No 4
when shot chld - now stands - ~~44~~ 47 1/2

No 3 Coil 8 1/2 recovers slightly after being
shorted chld in such low resistance

No 2 Coil, 67 1/2 recovers 1 deg in
1 min.

No 2. Large power cell Leclanche Regula.

No 4 Coil

Palangs in 2 min. to 36 3 1/2 -

No 3 Coil

77

No 2 Coil

69

No 1 Coil

71

in sounder not quite so strong as No 1 Cell
apparently there is a great difference in the
internal Resistance of these Elements
which is an objectionable feature - -

617

Coul

Shot clock then cancelled for intensity
at 1.55 pm =

Regular 1 1/2 Carbon: no SO₃ outside but
little Red fluid outside. ordinary rough &
tumble. way we do it here =

No 4 Carl	81
No 3 "	90
No 2 "	78
No 1 "	78 1/4

No 2. Cell do

No 4 Carl	87 3/4
No 3 "	90
No 1 "	78 1/2

Shot clock for intensity at 2.12 pm.

618

Carlton

DeLanché Regular 2 cell at
3 pm.

No 4 coil	28
No 3 "	76 $\frac{1}{2}$
No 2 "	74
No 1 "	77

Wks. Bunnell found string.

302 pm -

DeLanché Small new style no power cap

No 4	6 $\frac{1}{4}$
No 3	41
No 2	63
No 1	92

Works found to satisfactorily not
equal to the 2 water tested against page
which is $\frac{1}{3}$ of water twice as strong

619

Continued

Water No 1 & 2 ~

3,07 pm

No 4 Coil	23
No 3 "	73 $\frac{1}{2}$
No 2 "	74
No 1 "	76 $\frac{1}{4}$

Shaded

New Telephone Test Carbon

any stands 3 to 4 deg from zero, lowest talking 41.
which is about 20 ohms full in goes to 74 which is
little less than 2 ohms; goes for 5 to 30 in.
about $\frac{1}{2}$ a turn or say $\frac{1}{6}$ of a turn

621

Battery tests

Dec 22 1877

4:15 PM.

James Adams

decharge requires

NO 4	_____	16 17	
NO 3		55 #	
NO 2		54	recovers rapidly in 40 sec to 60
NO 1		62	
at 4:37. NO 4 → 25 = NO 3 TO NO 2 63			opened circuit at 4:20 PM.

Fuller -

NO 4 Coil	10
3 "	57
2 "	59 $\frac{1}{2}$
1 "	63

I find that the porous cell $\frac{1}{2}$ full of a solid brownish substance & almost all the H₂ gone in one cell & all gone in the other - although the outside solution is full up & has lost out little by Evaporation I refilled porous cells.

NO 4 Coil	23
3 "	70

Left open
29

622

Continued -

DIC 22

James Adams

the fluid outside is blue + played out
I don't think much of the fuller
improvement =

Lechman's Small

NO 4 Coil	2
3 "	7 1/2
2 "	23
1	43 1/2

opened at
431 PM

Notes:

NO 4 Coil
" 3 "
2
1

38 45
80 1/2 82 1/2
72 72
74

Opened 4:35 PM

623

Calend

22

Letchard Reg

4:40 ^{pm} = NO 4

30. palmer to 20 in 40 seconds

Whew!!

5:50 pm NO 4

41 polgs to 30 in 40 seconds

at 6 pm left it on No 2 Coil - stood ~~at~~ 70!

Dec 23 1877

Letchard Reg

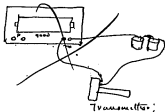
9:40 am ~~NO 4~~ I find that on No 2

Coil stands at 75 having gone from
70 last night to 75 on a 30 above coil

I.B.A.D

Memo Park Dec 22 / 77

~~The connections are this~~



199

626

Dec 23/77

Battery

on 18 ohm 2 cells Leclanche on 1 ohm strip
goes to 41 + palaces to 39 + then remains constant
The two water on same goes to 46 and is of
course constant hence as regards strength
the water is superior to the Leclanche
for Telegraphy =

I see that by opening the Leclanche 1 minute it
goes to $42\frac{1}{2}$ but palaces to 40 ~~in~~ 20
seconds = in 1 hour 38,

2 Cells Carbon^{new} goes to 70 on coil N03
with 18 ohms =

1 Cell Eo 50, hence 2 water is not quite
equal to 1 Carbon on this coil & Resistor

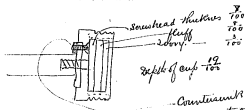
12:05 PM I put 2 cells Carbon on N03 coil 1 ohm
with 18 ohms - Rheo. stands 70 =

Dec 26, 1917

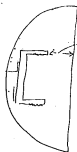
Model Telephone Transmitter
Sent to Murray.

Chas Patchlor.

Transmitter have got 10/32 screws
& screws in rubber



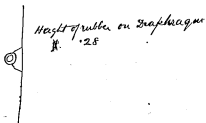
Counter sink head screw from inside
and nut on outside for connection



Depth of cup .22 from diaphragm when
adjusted up and .32 when adjusted
away.



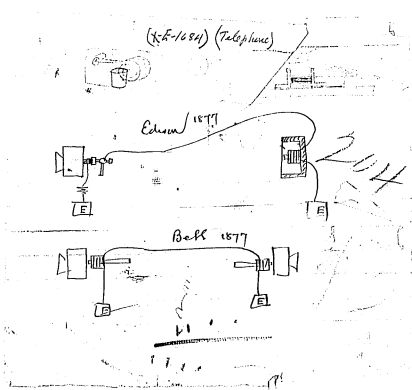
Small stud to hold platinum foil with
screw in for connection



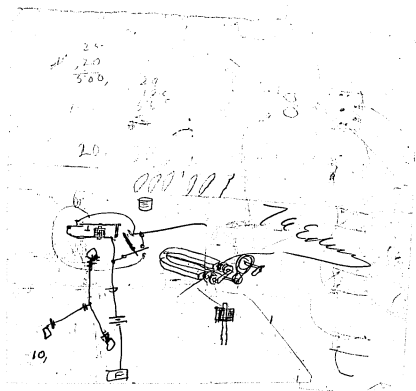
Height of rubber on diaphragm
#. 25

~~Screw 0.04~~

Screw	0.4
Sp. heads	0.4
Fluff	0.8



204



204

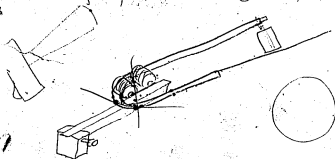
Notebook, Volume 14

This volume covers the period January-November 1878, with a few dated items for 1879. The notes and drawings are by Edison, Charles Batchelor, James Adams, and John Kruesi. Most of the material relates to the telephone. There are also a few drawings of the aerophone, the aurophone, the phonograph, and the microphone. The volume consists of 173 numbered, unbound leaves.

Missing pages, found in facsimile in the Telephone Interferences:
169.

Missing pages: 8-9.

Model for Patent office

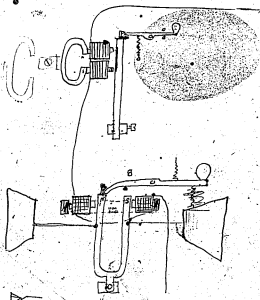


July 3 1875

7 A E

Chas Batchelder
James Adams
Providence

make.



No 1

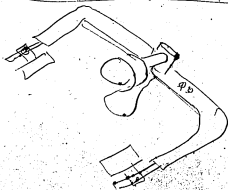
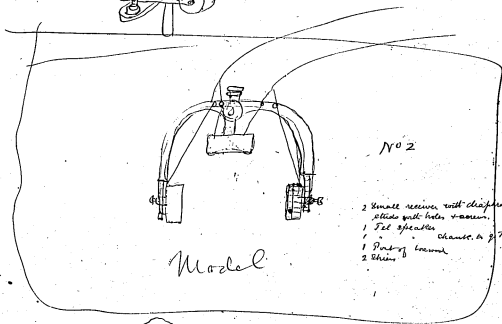
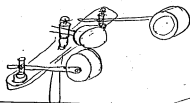
- 1 Head
- 2 Nibs
- 2 Spouts
- 4 Magnet
- 1 " bracket
- 1 Rear bracket
- 2 Spool bracket
- 1 Pen
- 1 Front bracket
- 2 Spreading tubes

1

Speaking telegraph

Jan 3 1878

Chas. Matthei
James Adams
Johnnie

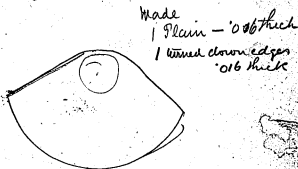
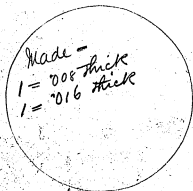
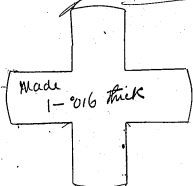
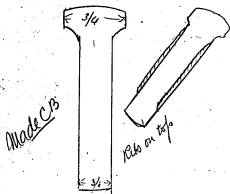


2

628
Staphygnus and Armatures

Jan 4th 1898

Chas Batcher
James Adams



628

Jan 4th 1898

Diaphragms

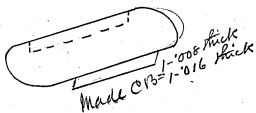
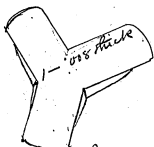
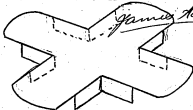
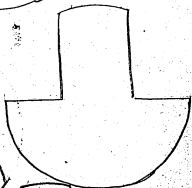
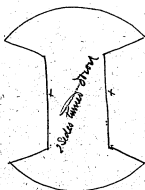
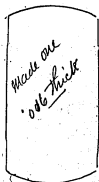
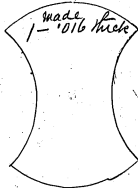


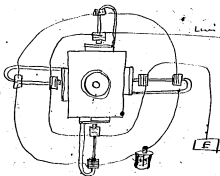
Chart Satchels



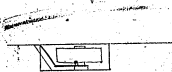
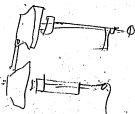
Made GP



Jan 6th 1878
 J. A. Edison
 Westchester
 James Adams
 J. Adams



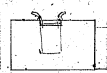
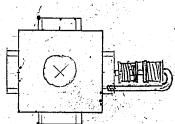
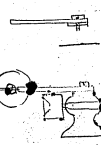
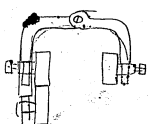
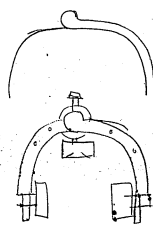
Model 3.



- 2 Magnet steel
- 2 Shafting rollers
- 1 Commutator
- 1 Armature
- 1 Back plate
- 1 Box
- 1 Nut piece

Jan 10 1876

James Adams
Hrucci



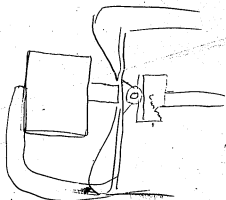
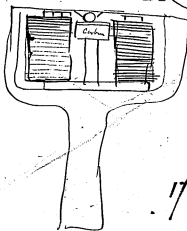
Epley Reploma

July 8 1878
T. A. Dixon
Shastabatchelor

6. 10 - 14
10
10
10



Trans & Recor
Combs



Boofen
int

17689k

Portland Portland
Portland Portland
Portland
Portland

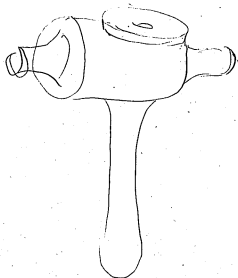
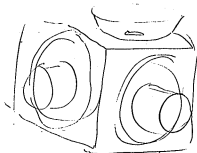
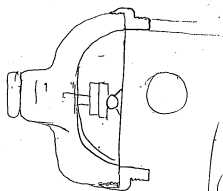
7

Lyley Phipps

Jan 8 1878

70th St

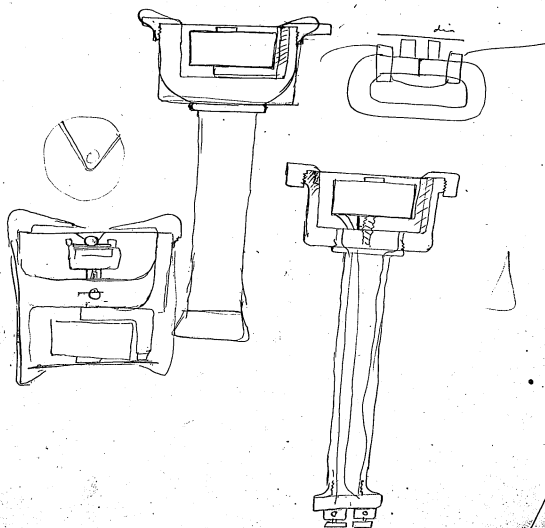
Chas. Satchers



Sply Belyph

7 мая 1948
Ташкент

Косбатчетер



Sperry Phelps

July 8 1878.

70 Edison

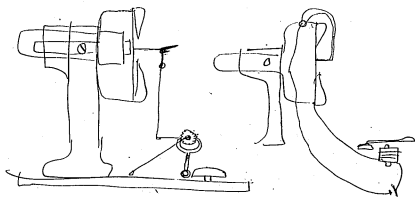
Chas. B. Chittor

I expected much trouble when telephons wires
became multiplied - and I think that induction
currents in many cases will have to be
abandoned on account of their tension
& consequent liability to jump to other
wires. Therefore my Carbon telephons using
2nd cell of battery ~~will~~ placed directly in
the line to vary its resistance will be the
best. The increasing magnets which would
set up high tension induction current which
would jump to other wires must be
shunted to prevent this. This of course
would lower them but by using very
short spools & cores slotted or of fine wire
was selected ~~it~~ it would scarcely lower
them appreciably - again the Emgraph
which of its self sets up no return
high tension current might be used
in a short line I believe my telephons
will be the only one for the future when the
wires are greatly multiplied -

Ally Stephens

July 8 1878

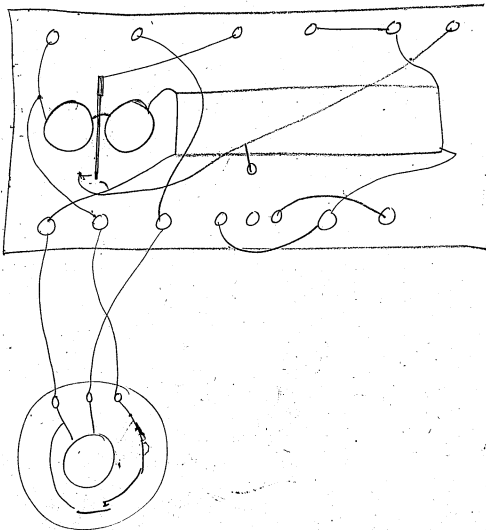
Patented
Geo. B. Nichols



Speaking telegraph.

Jan 12th 1896

Jalisco
Chas. Ketcher

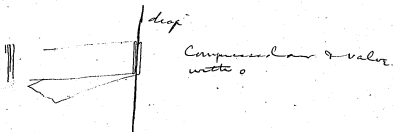
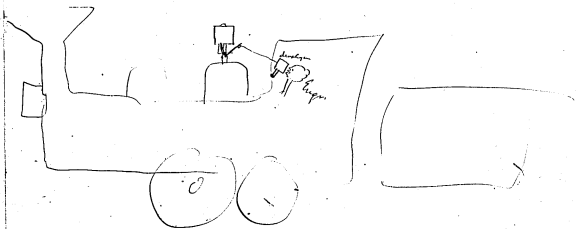


631

January 17, 1878.

J. A. Edison

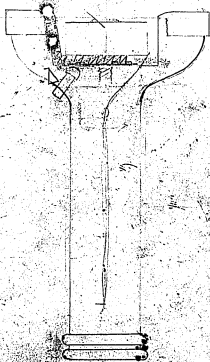
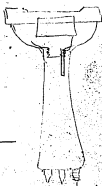
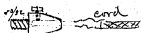
Steam telephone;
or Airphone



Speaking telephone receiver

Jan 21st 1898

Chas. B. Hatchels



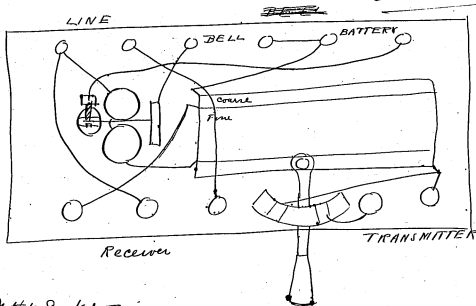
Jan 23 1878

Speaking telephone.

going

The coils taken by T. Muskis Co. to Paris were connected up as:-

Chas. Batehuta



Outfit sent:-

One. (1) Phonograph.

He took another Phonograph from his house

Sailed on 'Cumbria' Hamburg line for Aberdeen by France.

- (4) four Watson Batteries
- (200) two hundred feet twisted kerite wire.
- (50) fifty feet of Kerite wire
- (2) two transmitters (Batehuta's make)
- (2) two receivers (1/2" diameter) one cut out.
 - { one Batehuta make new pattern
 - { one Bergman altered over
- (2) two Bergman Bells
- (2) two Bergman coils altered to above sketch
- (4) four double conductor cords.

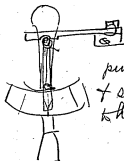
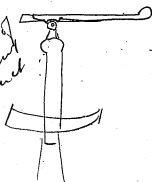
632

Speaking telephone

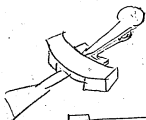
Jan 23rd 1878.

Chas. B. Satchel

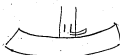
head on end of
lever + spring
with notch and



pin underneath lever
+ spring with notch in it
to hold in middle.



spring under notch
lever with notch for
lever to drop into

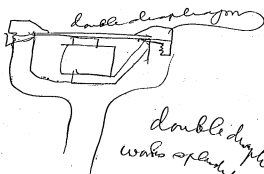
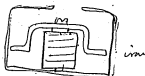


Telephone

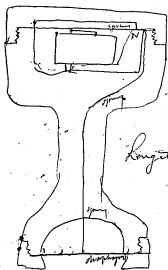
July 23 1878

J. A. Watson

Charlottesville



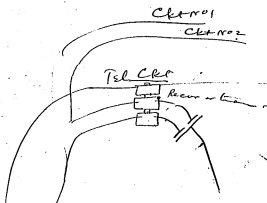
double diaphragm
works splendidly



longitudinal vibration

Telephone

Jan 23 1878
J. A. Mason

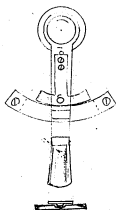


633

Jan 24 1898

Speaker's telephone

Chas. Batchelor



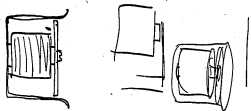
21

January 25 1878

⁶³⁶
Teli phone -

In a tin organ pipe the chestnut
through which the wind passes
is provided with teeth & propose to
try this on the edges of the hole in the
Teli phone - Mr. Rowland says it makes
the tone purer gets rid of the hissing
sounds - This may be good for phonograph
also =

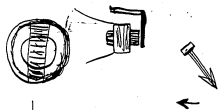
Jan'y 25th 1878
Adams



23

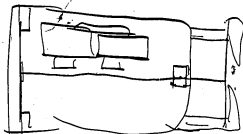
Jan'y 26th 1878
Adams

Reverses



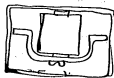
24

Jan'y 28 1878
Adams



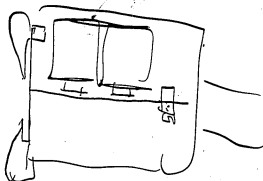
25

Jan'y 26th 1878
Adams



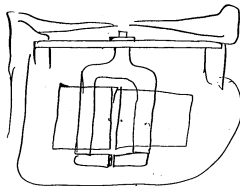
26

Jan'y 26th 1878
Adams



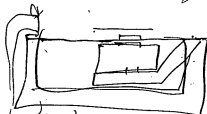
27

Jan'y 26th 1878
Adams



28

Jan'y 26th 1878
James Adams



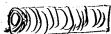
29

637

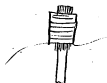
Speaking telegraph

Jan 27th 1876

James Adams



thin tube with fine wire wound over it



soft iron core stuck round the core
get it very good without any diaphragm



Good pieces of steel wire magnetized



Conical diaphragm

can get talking as loud as
the Bell telephone

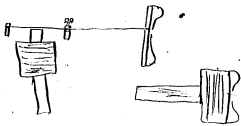
30

638.

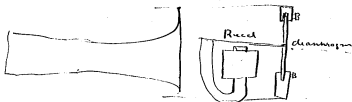
Speaking telephone

Jan'y 28th 1878

James Adams



Steel or Iron wire



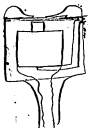
Polarized relay
stem of tin between the
Magnet fastened
at both ends
mica diaphragm.

689

Speaking telephone

Jan 28th 1878

James Adams



Mica diaphragm next the cone and iron over it -
gives the best talking yet -



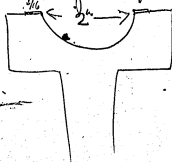
Copper cone & copper diaphragm

Alterations of Thru Transmitters Speaking Telephone

Jan 31st 1948

- 1 Turn out mouth piece & fit in.
- 2 Turn out body & fit in.
- 3 Plug up and solder ~~holes~~ slots in rod
- 4 Body part of fluff cup must be left thicker as the throat is cut through
- 5 Make new screw for adjustment
- 6 Put new slot in rod same as model
- 7 Make this set the stops for both ends of adjust
- 8 Make band posts with $15/32$ screw to screw in rubber
- 9 Make screw driven head ^{iron} screw for screwing up wire
- 10 Band post + screw + adj. screw + stop screw nickel plated
- 11 Make new cork like and rubber like sample - both must be like sample exactly especially in height.
- 12 Flat rubber Put in boxwood cappie instead of rubber
- 13 Diameter of inside of body cup $2''$ bearing of rapl only $3/16''$ + mouth piece to suit

14 Bearing of
dead tree.



diaphragm must be

Alterations on Bergmans receivers
Speaking telephone Jan 31st 1898

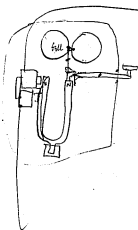
- 1 Make new earpiece like model
- 2 Make outside of diaph. $1\frac{3}{4}$ + inside of hole in cap $1\frac{1}{2}$
- 3 Securely dead true
- 4 ~~Make~~ Turn hole in body out + cut thread in $\frac{1}{4}$ inch in its screwing it in & secure by ^{rubber} pin to ~~prevent turning~~
- 5 Turn inside out to $1\frac{1}{2}$ diameter and $\frac{1}{16}$ deep. exact
- 6 Cut thread on for cap.
- 7 Make new magnet same as model
- 8 The part of face of magnet that stands inside of the circle ^{must be reduced} not more than necessary to make diaph work free.
- 9 Make new cores like sample perfectly flat on top and the thickness of the diaphragm lower than the mm -
- 10 Bone hole same as model and put in bumper & screw same as model and nickel plate same
- 11 Connections must be rubber covered wire

Good Idea

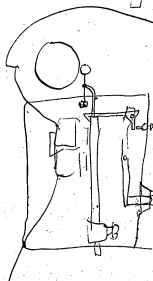
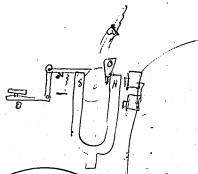
Magneto Electric Call Bell
for private Houses etc

Feb 2 1878

J. A. Dixon



ditto here -

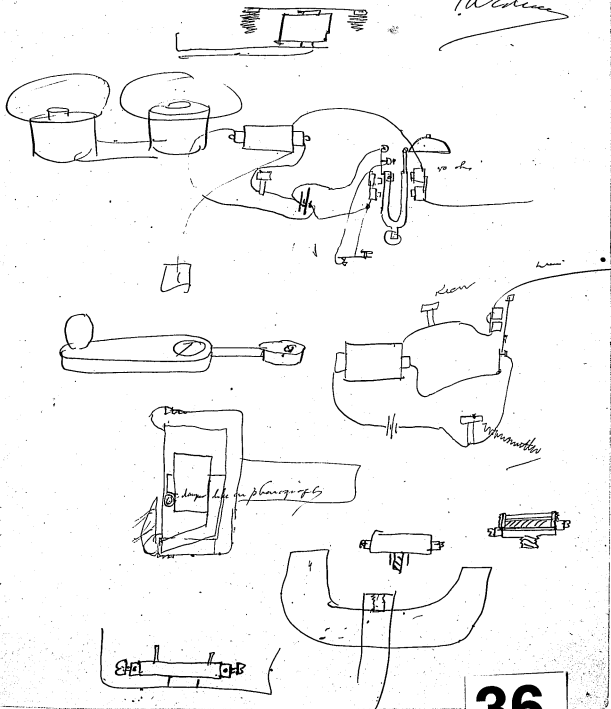


push button

ditto here

Telephone

July 3, 1878
T. A. Edison



¹⁰⁰⁰ Speaking telegraph test
Menlo Park N.J. to Philadelphia
Feb 4 1878

Bentley says

I am very much disturbed

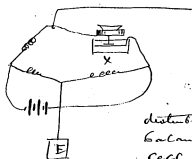
I am very much astonished and so must any one be
who reflects a minute. I recognized your voice instantly

Bentley got all we said and repeated it back twice

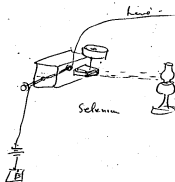
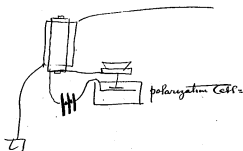
This opportunity to him afternoon and shall be glad
to test them with you any time

Telegraph

Feb. 7 1878
W. A. D. W.



disturbance of
balance by a polarizing
cell X =



611

Telephone (Speaking)

Feb. 10th 1898

Set of Coils for best

Chas. Satchel

No 1 Coil not very good

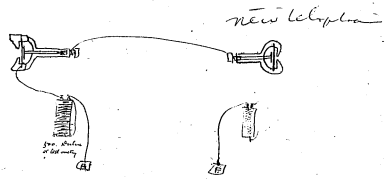
No 5 Coil the best

No 7 coil weak

No 8 the best.

No 12 Breakfall - on Calland & Cairn.

Rems '6 priming 200 secondary

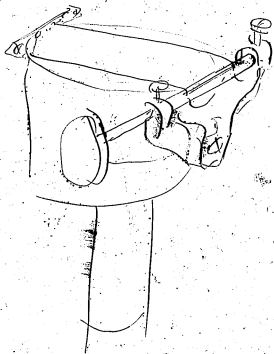
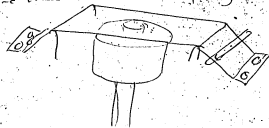


642

Phonograph + Reel

Feb 12 / 78

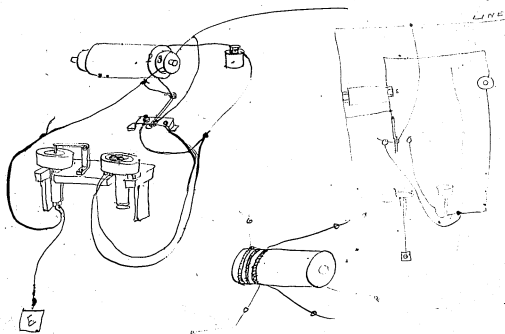
Sketched amplifier and the thing
Can use large thin wire steel get good calculation
besides the loudness



John

Feb 12 / 78

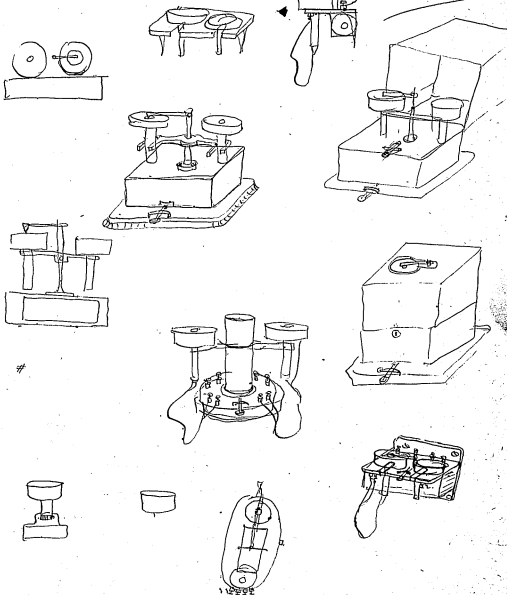
*W. Volman
Charleston, W. Va.*



Model for patent office -

Stephan

Feb 20 1878
7A Edison



Feb. 20th 1898.
Speaking telephone

Edward Katchelov

Size of No 12 coil the best we have found as yet.

size of secondary No 32	³³ — 200 ohms	layers	12	10.
size of Primary No. 16	¹⁶ — 6 ohms	odd.	4	5.

Outside diameter same as before.
diam. of hole of.

Phonograph TINFOIL
Size of tinfoil for small used for
showing principle of Edison Speaking
Phonograph

✓ $1\frac{3}{4}$ long 2" wide .002 thick

Menlo Park N.J. February 22 1878

Some directions for conducting empirical experiments in Telephony
a voyage of discovery into the unknown.

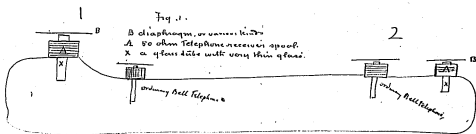


Fig 2

A 50 ohm Telephone spool.
B dia. of various kinds
X glass tube.

Make cores to replace glass tubes of Copper Zinc Tin Brass Lead cast iron, Cadmium aluminium
Blackoxide manganese, Gutley Carbon - Lamp black plumbago, Bismuth antimony, carbonic
Hard rubber, fused chloride zinc do Nitro - do Sulphate Copper; do every salt that will fuse or
mould - do every substance in laboratory that will mould

Make a mould that will mould this size:



In glass tubes pour every kind of liquid in it in laboratory and hold perpendicular; try and
receive from a Bell telephone with common diaphragm then change all kinds of diaphragms
below described, if all a failure try and transmit to a Bell telephone receiver with the
changes; then the 1st Experiment is to see if you can use it as a receiver from a
Bell Telephone the second experiment is to see if you can use it as a transmitter using
the Bell telephone as a receiver - use diaphragm dipping in liquid also not dipping

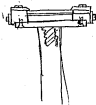
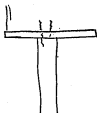
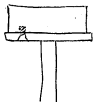


Speaking telephone

New Duff Cup

Feb 22nd 1878

Wm. B. Duff



503

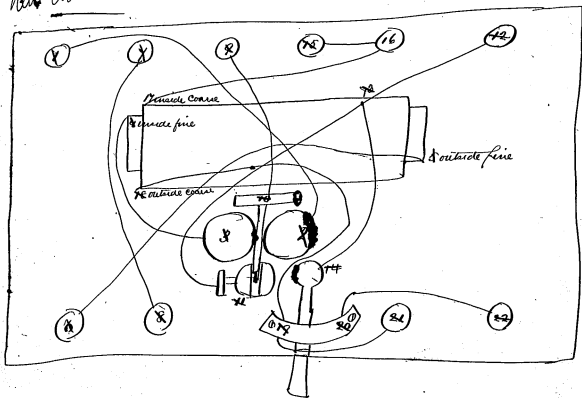
65

Speaking Telephone

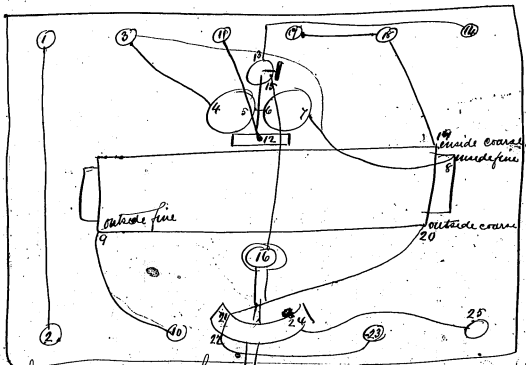
February 27th 1914

W. S. Petrol

New Oil box connections.



Make all connections hereafter like this

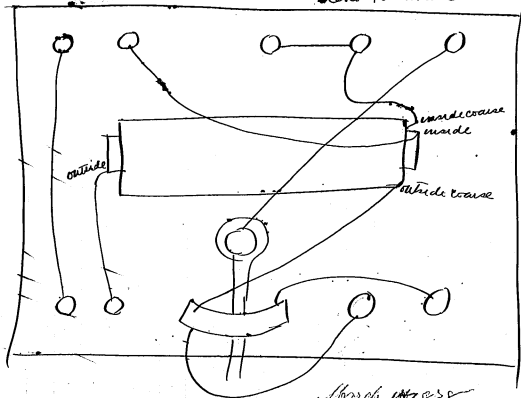


You see there is no ~~change~~ on these
 for making these same connections on
 the other bases there may be.

Batchelor
 Feb 24 1941

Speaking telephone

Feb 27 1918
Chapman



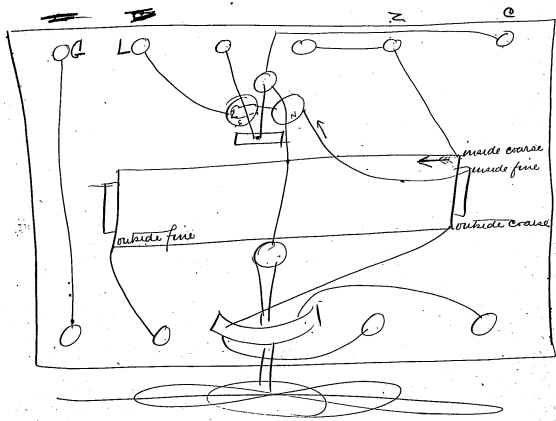
March 1918
J. K. ...

6447

Feb. 24 1848

All connectors hereafter will be made so

Chas Batcher

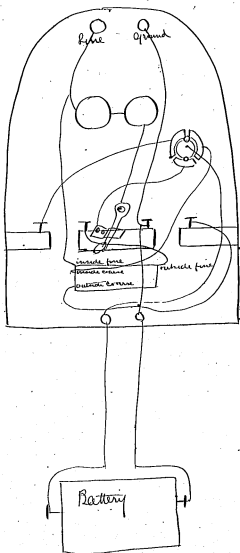


Speaking Telegraph

March 1st 1878.

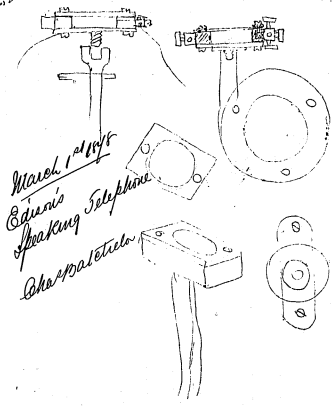
Charrachery

J. S. ...

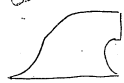
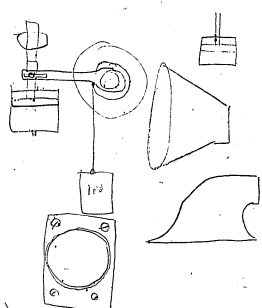
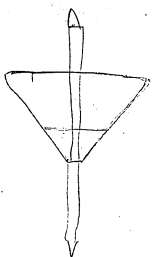


652^{3/4}

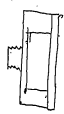
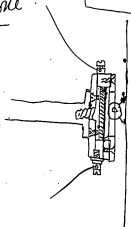
652



March 1st 1898
Edison's
Speaking Telephone
Chas. S. S. S.



Speakers telephone



*Speaker of 1915
Chapman*

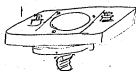
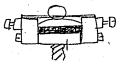
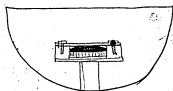
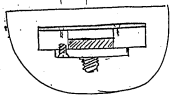
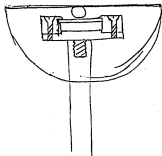
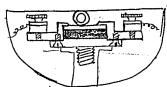
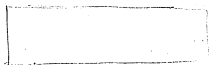
53

14

53

Speaking telegraph

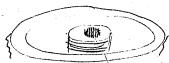
Uch 6th 1848
Charles Babbage



⁶⁵⁷ Speaking Telegraph

March 6th 1878

Chas Patchell



Steel wires all magnetized

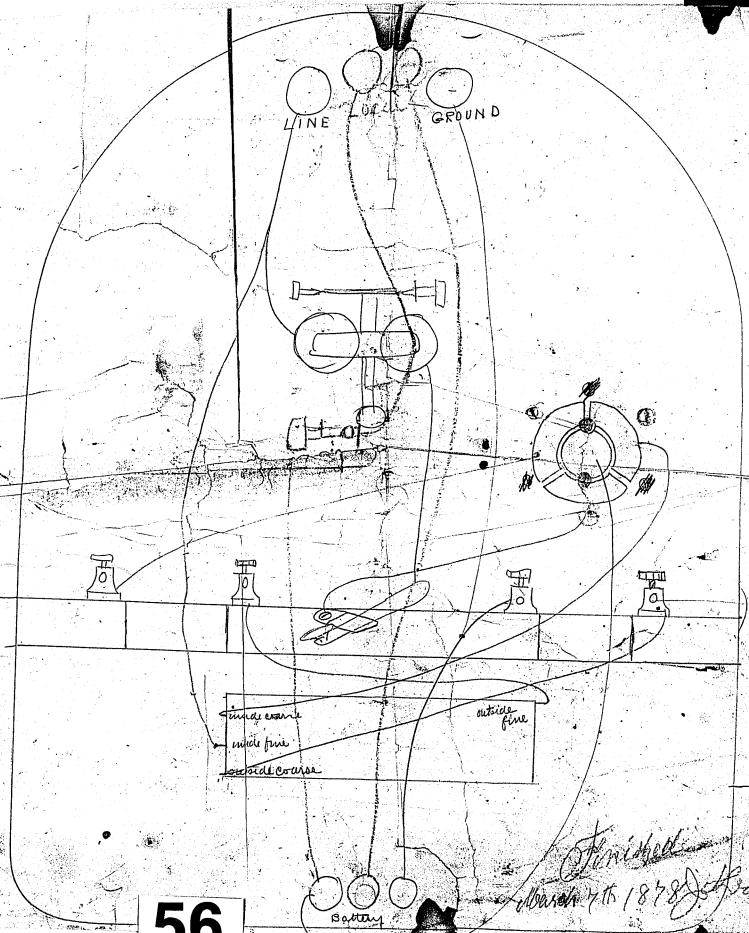


Hard rubber core
Steel pins in magnetizer

Wind spool of wire
with layer of steel
between each layer

8

Chas Batchelor



56

Battery

Finished
March 7th 1878 J. B. Sweet

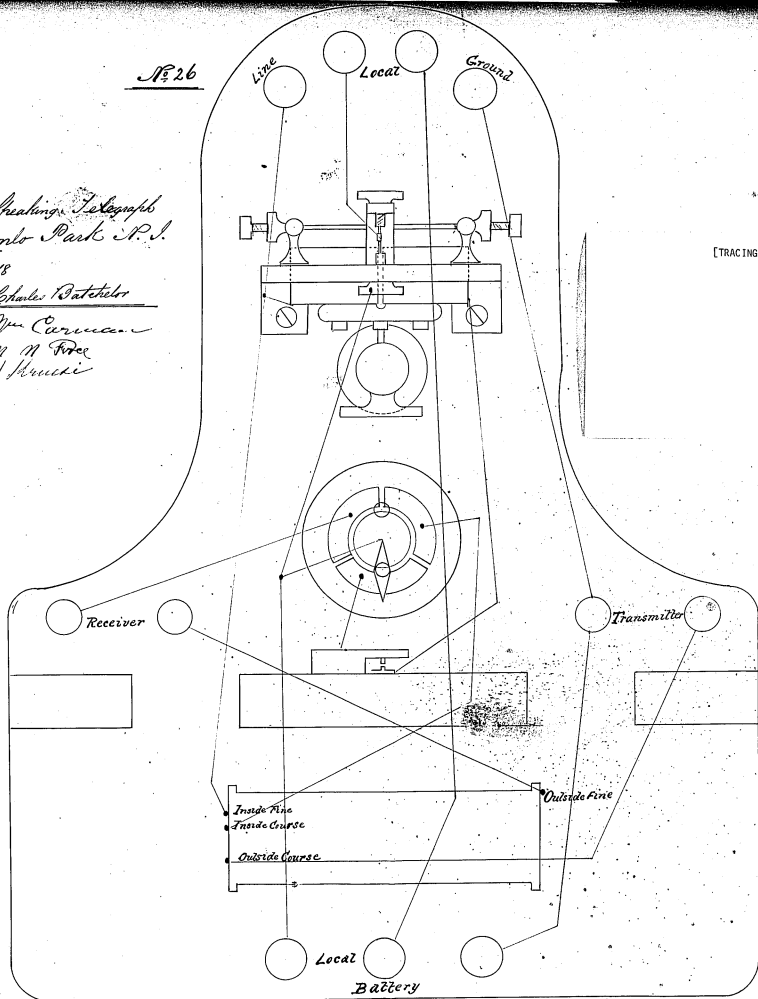
No 26

Edison's Speaking Telegraph
Wentworth Park N.Y.

March 18 1/2 1878

Charles Batchelor

Wm. Carman
M. M. Fox
J. H. Mearns

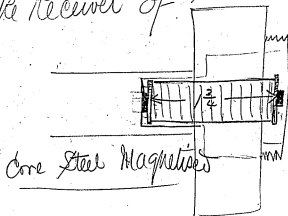


[TRACING]

Speaking telegraph

March 9th 1878
Chas. Bateheln

Make Receiver of



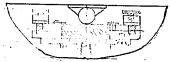
Core Steel Magnets

688 1/2

Speaking telegraph

March 17 1878

Ahak Ratcheto



Finished March 14th 1878

J. Kruesi



659
Speaking Telephone

12th 1918

Chas. B. Datchell

Test of Coils -

No 1 Coil

All

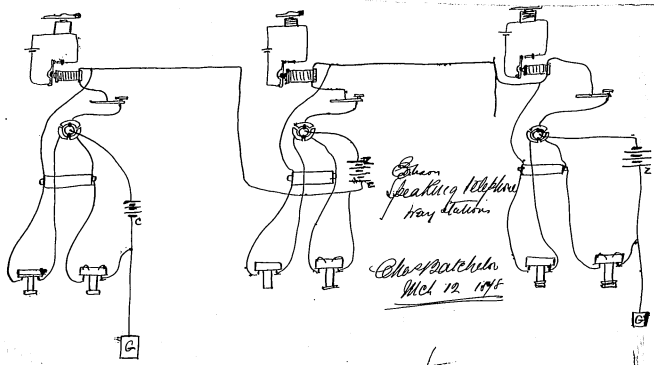
Primary # 22 4 layers = res. 2 ohms

Secondary # 30 9 " = res. $\frac{1}{4}$ ohms

Kept at 160° Fahr. for 12 hours and soaked in boiling paraffin

Remarks

Shock on



*Three
speaking telegraph
key stations*

*Cherapatchin
Mch 12, 1918*

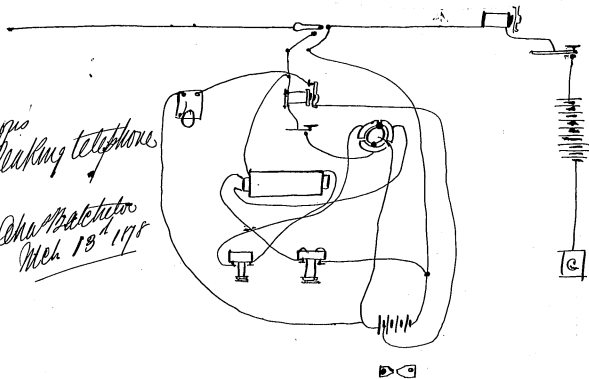
Sharning of this

61
4

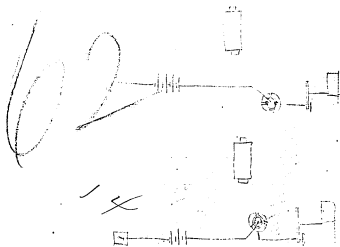
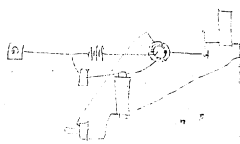
61

*Cassio's
Speaking telephone*

*Cha. Batchelor
Mch 13th 1878*



Connections for Edison
Speaking Telephone
Name Part 41
March 17 1874



62

63

12

63

March 14

Chast Batchen

No 2 Coil

Primary *18 Silk 4 layers. = Res. 44 ohms.
Secondary *28 Silk 9 " = Res. 40 ohms.

Dried at 160 Fahr. 1½ hours & soaked in boiling paraffin
Sho. Ck. ~~from~~ 1 Cell Carbon.

Remarks.

661

Speaking Telephone

March 14 1898

Chartcatcher

Coil No 3

Prim. * 18 - 4 layers Res. 54 ohms
Secnd. * 28 - 9 " Res. 44 ohms.

Chock. after Paraffin + heating 1/2 hour at 168° F.

Remarks.

602

Speaking Telephone March 14 1918

Chas. Batchelor

Coil No 11

Prim. #14 cov. 4 layers - res. #14 ohms
Secondary #26 silk 9 " " 654 ohms

Heated 1/2 hours 160° Fahr. + soaked in Paraffin

Remarks

Wind 14 5
39 - 9

#14
54 30
11

Wind 14 5
30 - 17

663

Speaking Telephone

March 14 1948

~~Chas. Satchell~~

Coil No 5.

Prim. #14 layers	Silk 4 layers	Res. .34 ohms
Secondary #92	Silk 9 layers	150 ohms

Remarks.

Must two of these
 immediately

664

Speaking Telephone March 14 1914

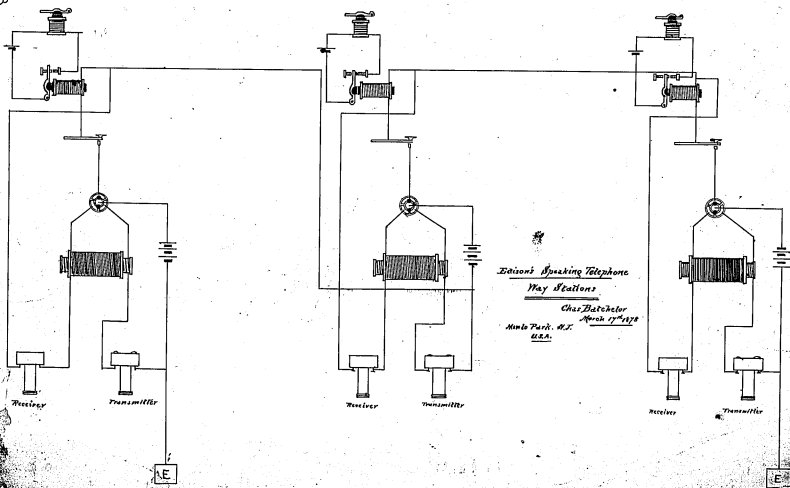
Chas Patchett

No 6 coil

Prim. #14 Silk 4 layers res. .69 ohms
Secord. #34 Silk 9 " " 200 ohms

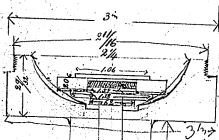
Remarks

70-23



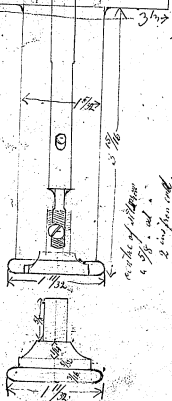
Edison's Speaking Telephone
May 1878
Chas. D. Batchelor
March 17th 1878
New York, N.Y.
U.S.A.

Spanning Telegraph March 19th 1858 J. H. ...



$$\begin{array}{r} 7 \\ 9 \\ 8 \\ 3 \\ \hline 34 \end{array} = \frac{11}{52}$$

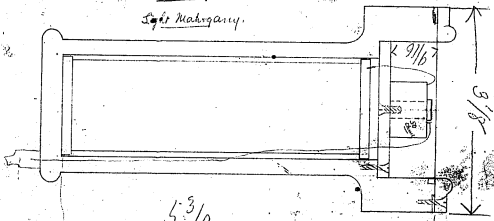
$$\begin{array}{r} 9 \\ 2 \\ 3 \\ \hline 27 \end{array} \frac{605}{220} = 2.75$$





Design for new received on Subject from March 23rd 1878
No 34
Sgt. Mangano

W. H. B. S. S. S.



Specification
made for
Sgt. Mangano

5 3/8

Speaking telephone

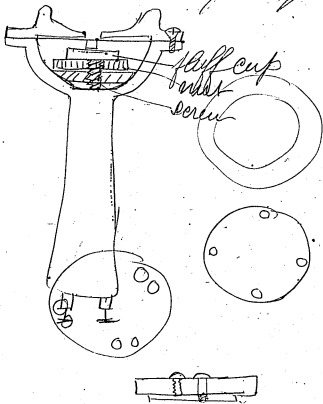
March 28 1898

Chas. H. Satchels

J. H. Mason

Transmitter with adjustment in cup

Don't give up

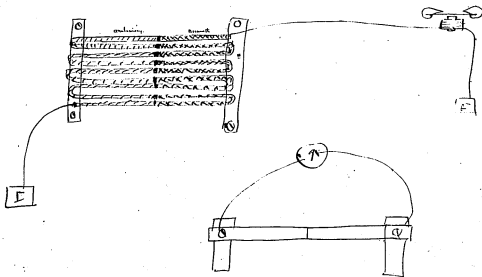


665

Telephone.

March 23 1878.

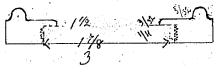
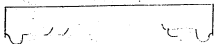
T. Edison



Thermo Electric Telephone.

Sound waves bend junctions giving heat or rather Electric waves corresponding in strength to the air or sound waves.

Speaking Table & Chair Nov 25th 1888
Procs. J. H. ...



Wed 26th 1848
Speaking telephone

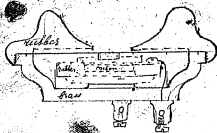
Record of test between Philadelphia
Went's Park on Edison's Speaking Telephone
Prof Barker at Philadelphia ^{and} ^{the} ^{place} ^{where} ^{we} ^{want} ^{to} ^{test}
at Went's Park.

Barker wanted to test between 4 to 6 pm.
Batch sent word that he would be on
No 7 at 4:30

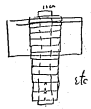
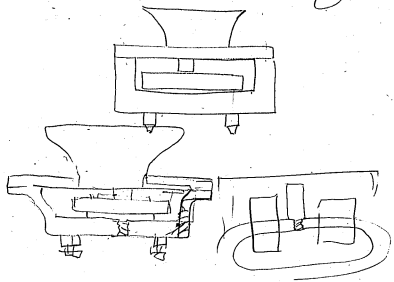
^{5 pm} waited till five pm then after great trouble
got on No 7 and then he apologized saying they were
busy reporting big fire would be ready in a few minutes

^{6 pm} Man in Philadelphia wanted to know what
was the trouble and after a long while he
told us that Barker was at UN + was connected
through

Speaking Telegraph March 29th 1848
J. Bracco

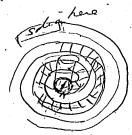


Speaking Telegraph March 30th 1888
J. S. White



For receiving telephones
etc.

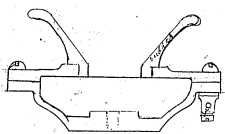
Portland



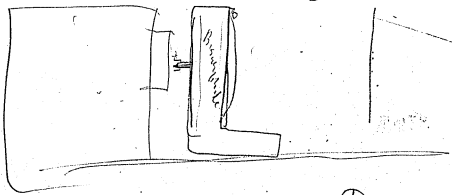
Splicing Telegraph April 1st 1868

Small @ Iron Works.

J. H. ...



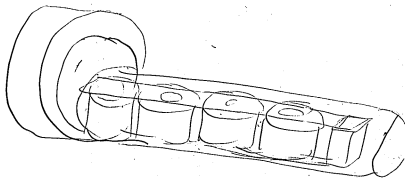
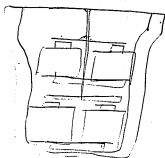
Thermocarbonated thermometer



P P P Portland
P P P
P P P
P P

Speaking Telephone

April 3 1878

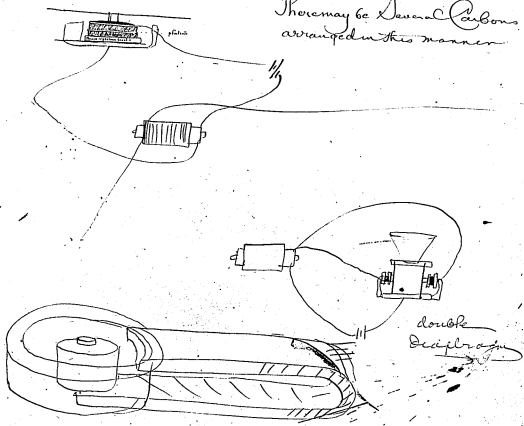


79

Speaking Telephone

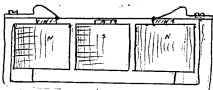
April 3 1878

There may be several carbons arranged in this manner

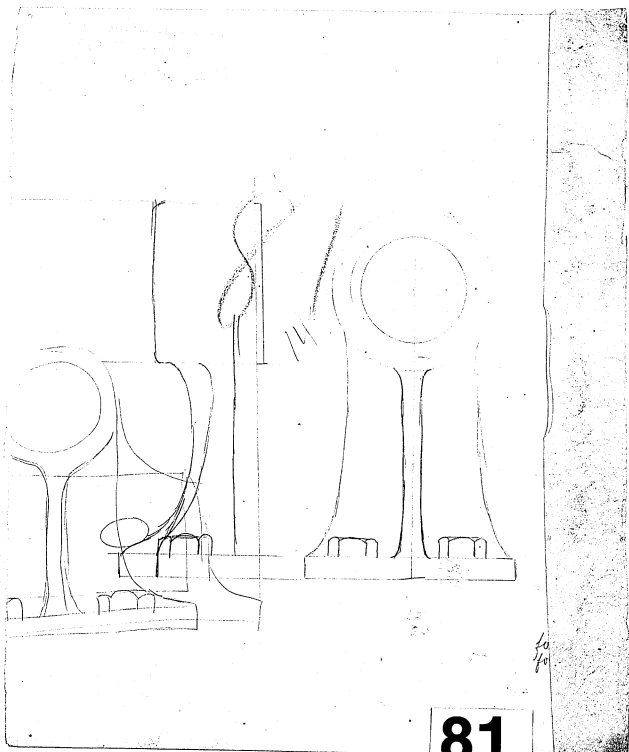


Johnson

Speaking Telephone
April 3rd 1918
W. E. Hill
Speaking Telephone

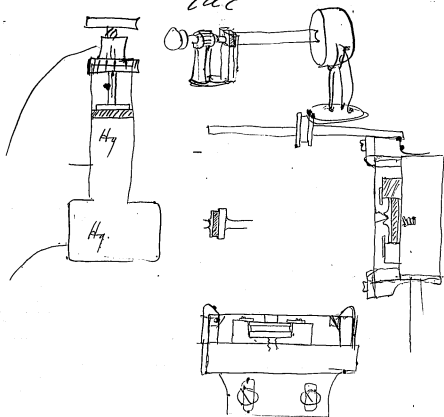


30



81

1 April 1878
ZAE

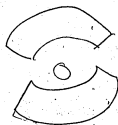
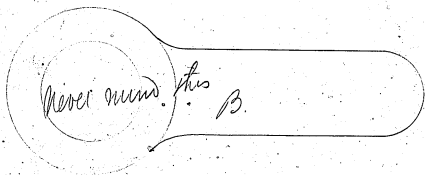
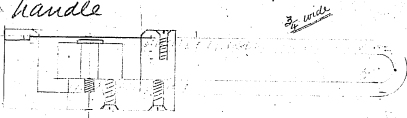


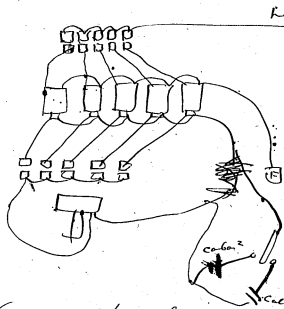
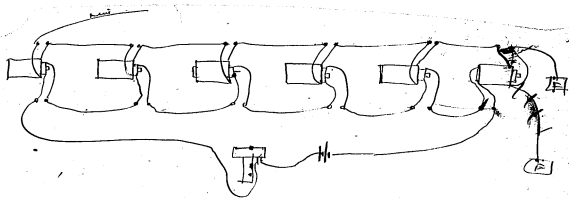
82

Spec. by telegraph
Apr 9th 1876

Chas. B. Johnson

Make receiver like this: Permanent magnet
 $\frac{3}{4}$ " wide. leave ~~two~~ magnet sticking out
for handle





Charlottesville

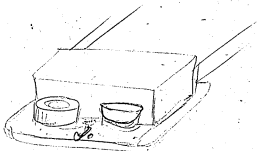
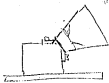
*James Adams
St. Macpherson*

Apr 12 1878

*No. 12 - 6/10 ohm
200*

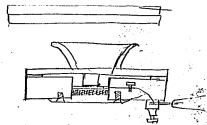
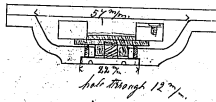
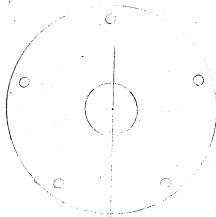
May 1 1878

Telephone



Speaking Telegraph
May 5th 1888.

J. B. B. B.
Charlottesville



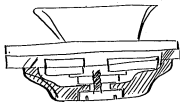
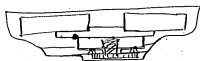
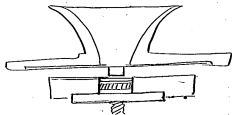
Charlottesville



Speaking telephone

May 4 1898

Charbatcher

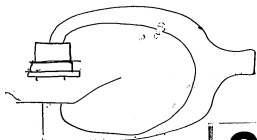
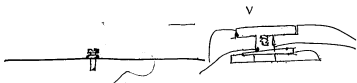
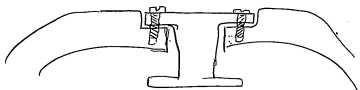


87

Speaking Book

May 8 1878

J. A. Edm.



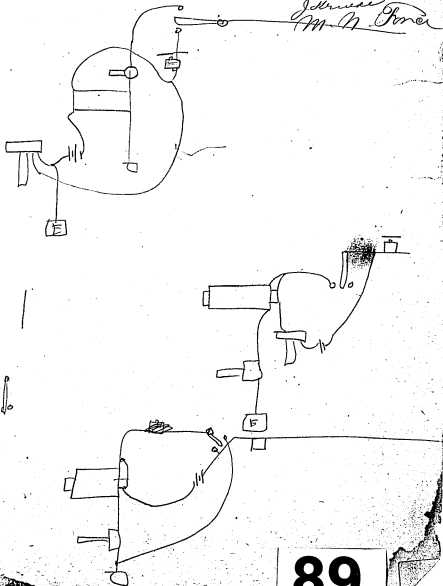
Telephone

May 17 1878

T. A. Edison

Char. Batchelor

John
Am. N. Jones



Nelson

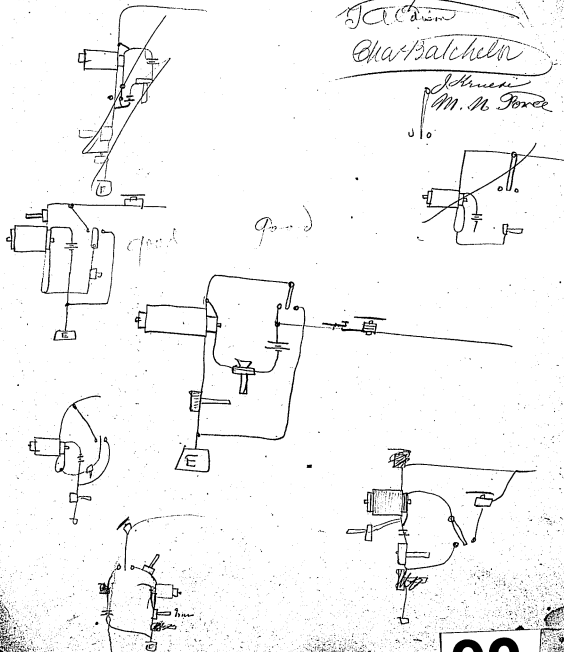
May 17 1878

J. A. [unclear]

Chas. Batchelor

Johnston

M. H. Force

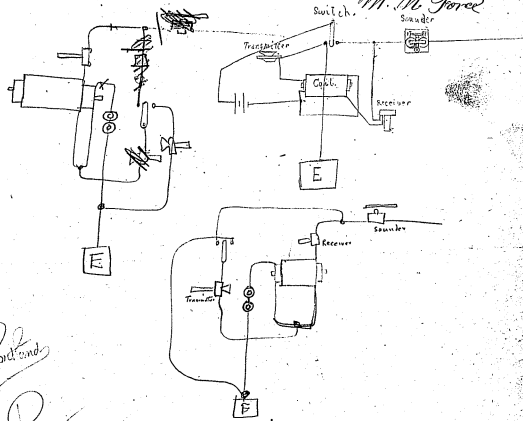


Wm. M. Force

Teleph

May 17 1874

T. Edison
Chas. Bache
J. Hussey
M. M. Force



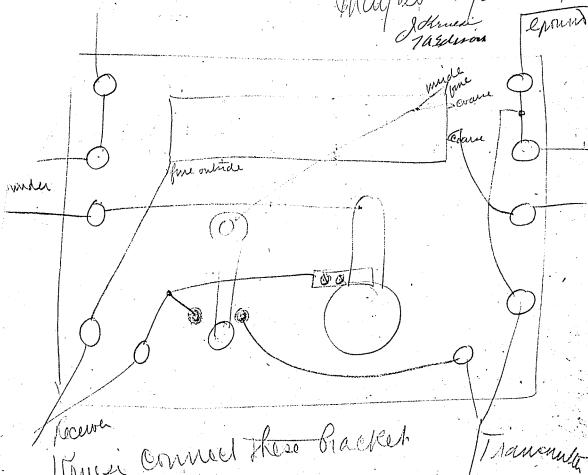
Portland

Portland

Portland *Portland* *Portland* *Portland* *Portland*

Breaking telephone

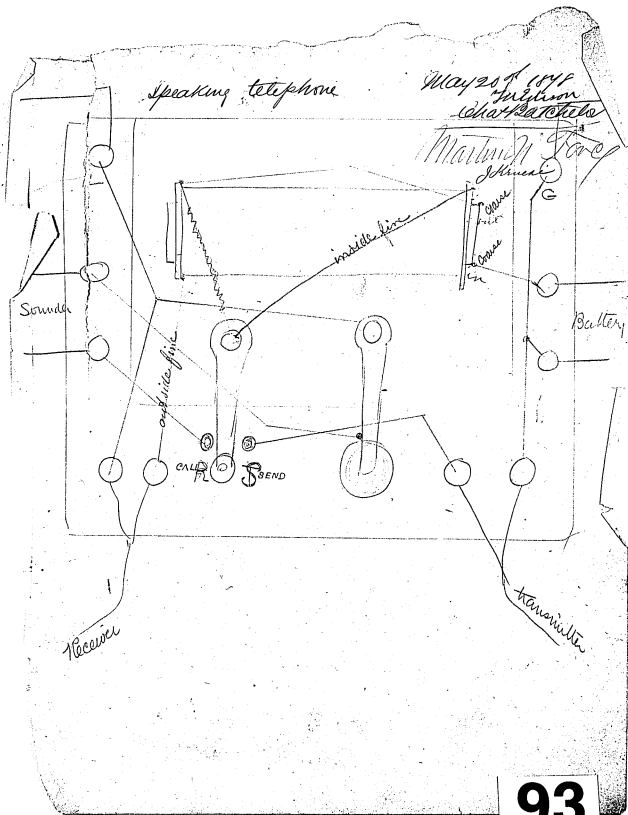
May 20 1878
John
T. Johnson

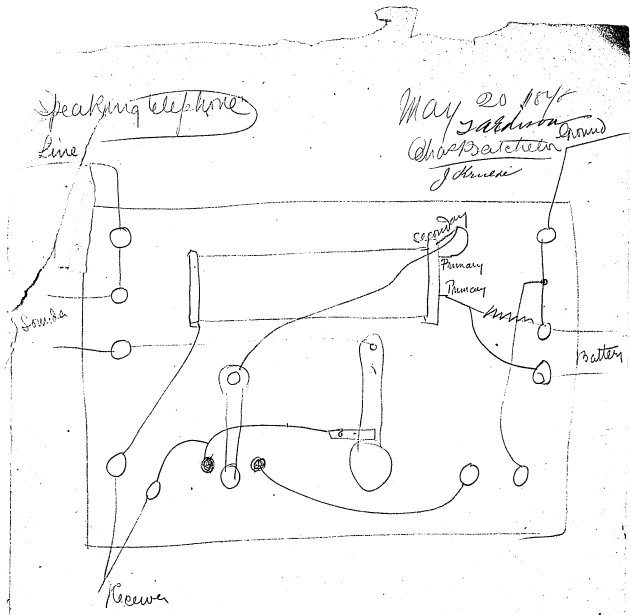


Receiver
These connect these brackets
top this way

Transmitter

W. P. Batchelor
Martin M. Fox





Speaking telephon

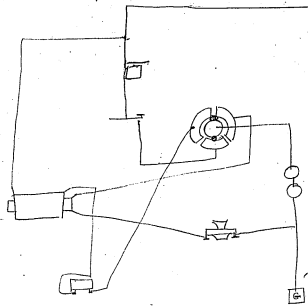
May 23^d 1878

Chas Batchelor

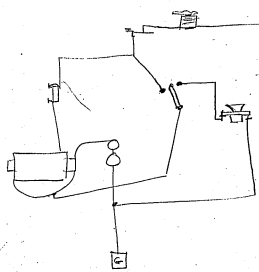
Martin W. Fox

J. H. Mendenhall

W. A. Edison



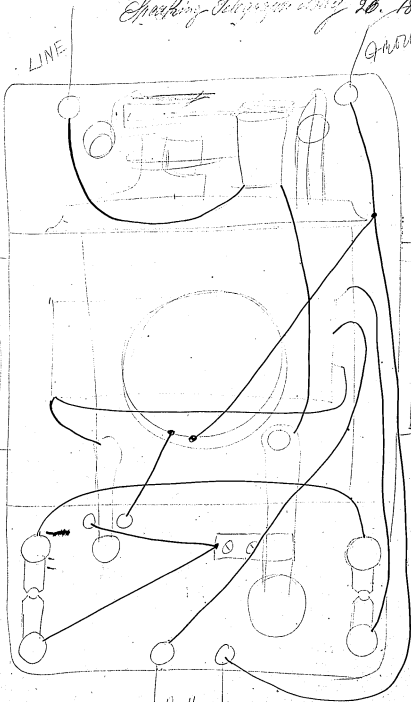
Bracket connection



single switch connection for base -

Shawbury Telegraph Station July 26. 1868

G. W. M. J. H.



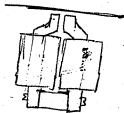
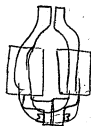
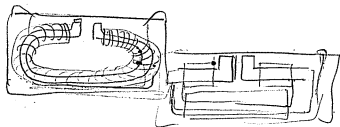
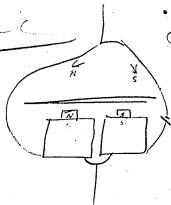
Battery

96

Telephone

May 26 1878

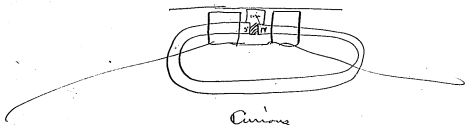
J. A. Edison
Sketcher



97

V. L. ...

T. L. ...
May 26 1898



Curving

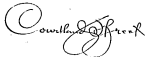
Portland Portland



P
Portland



Portland

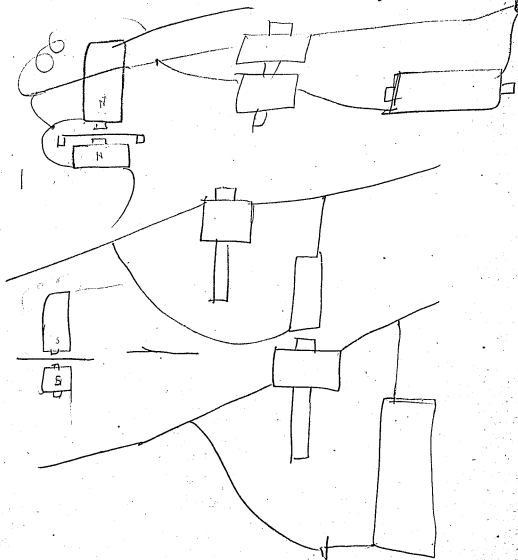


Direct



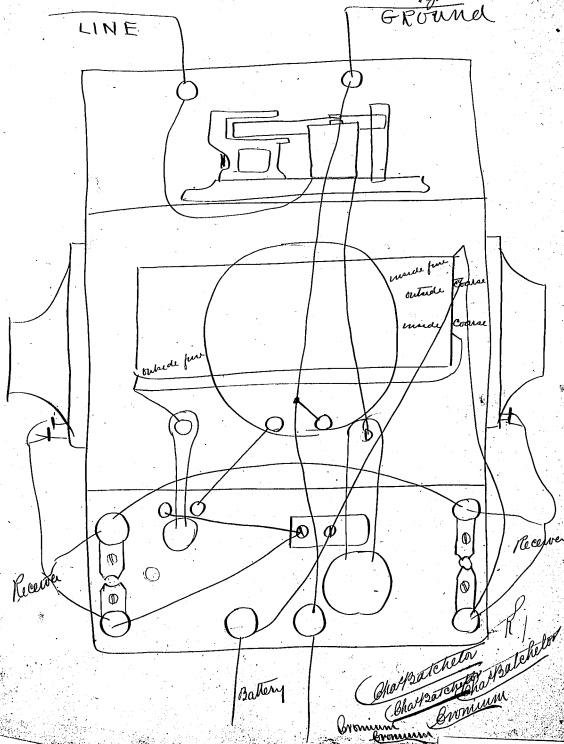
Telephon

May 26 1878
Tardieu



Speaking telephone

May 21 1908
Chas. B. Atcheler
Phon.

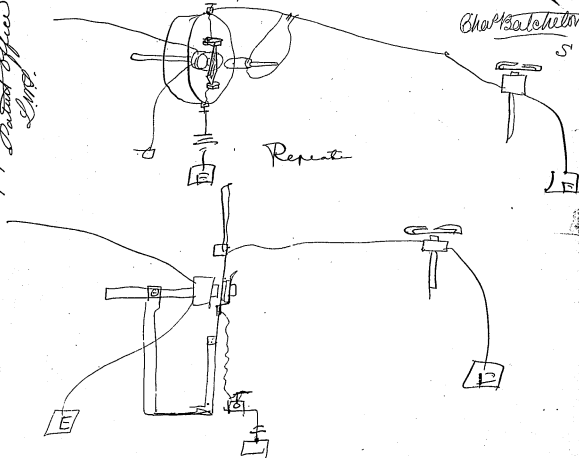


Edison - Short
Exhibit B.
834

May 28 1878

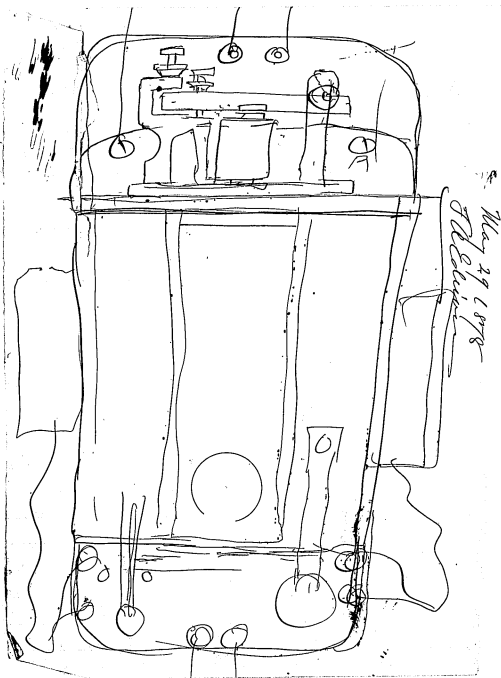
Gardner
Chapman

Original of which this is a
Photolithograph sent to
Patent Office
L. M. P.



100

1
2



101

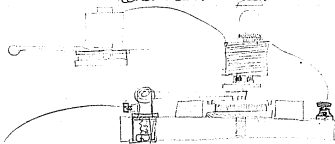
T. A. EDISON.

Menlo Park, N. J.,

187

T. A. Edison

*May 1878
Char. Batchelor*



*Made this
wired at
Lond to May
at Scranton*

Telephone

Chemical course June 2nd 1918

Gum Arabic	could bear vibrations when other resins were out	loud
" Sandarach	softer than, amber shows not much difference when took out	loud
" Avicennae	weaker, in contact and not	loud
Pine Resin	do	stronger when not in contact
Borax	Fair	
Indian Hemp	very weak	
Sulphate of Iron	weak	
Starch	medium	
Chalk	ditto	
Sulphuric acid	—	
Litharge	—	weak
Asphaltum	—	ditto
Sulphur	—	"
Gum Arabic	—	very weak
Benzoin	—	weak
Carbon	—	medium, faint
Snuff	—	ditto
Black sand	—	weak
Gum Ammoniac	—	medium
Shellac	—	ditto
Sage	—	
Damar	—	ditto
Gum Tragacanth	—	
Brass filings	—	ditto
Brazil wood	—	ditto, little louder
Black Lead	—	ditto
Zanzibar	—	very faint, quite weak
Chlorate potash	—	ditto
Sulph. Capes	—	ditto
ferrous cyanide potash	—	very loud
Bronze	—	loud
Animal charcoal	—	
Asph. Robustus	—	Fair
Madder	—	loud

Telephone

Tannin Fair

Bromide Potash Fair

Whiting Fair

Salt ~~not used~~ Fair

Potassium Chloridum Fair

Chrome Alum Fair

Nitrate Ammonia

Aug 3rd / Ammoniacs Fair

Kaolin Fair

Oxalic Acid Fair

Argal Fair, is better than others when touching the diaphragm

Bicarb Potash Fair

Potassium Cyanide Potash Fair

Potassium Chromate Potash Fair

Trigall Fair

Carb Soda Fair

Rottem Stone Fair

Citric Acid Fair in better H₂O

Arsenicus weak

Dexamine Fair to good

Pumice Fair

Silicic Acid Fair

Bismuth Fair

Fine clay Fair

Phosphate lime - Found. Carry greatly in adjustment -

Tartrate Soda Fair

Potassium Permanganate Potash (ammoniac) Fair

Nitrate Strontia Fair

Chloride Calcium

Bi Carb Soda Fair

103

Cyanide Potash Fair
 Sumac Fair
 Cudbear - Poud.
 Cam wood Fair
 Sulphate Barite - very loud almost as loud as the standard and increases and decreases in adjustment which was not noticeable in the yesterday
 Fluor Spar - Fair
 Iodic potassium Fair
 Stearic Acid Fair
 Phosphate Soda do
 Ammonic Acid do
 Sesque Oxide Lead do notice that in taking out care that is slightly heated
 Ferro Cyan Iron do - act slightly different
 Sesque oxide Lead - by inserting them in the Sesq- ox Pd, which is contained in Glass cone raises from normal 80- to 101- with two cells battery - the same tried with dextrose raises to 98 - this may be due to the different conductivity of the same of the heat generated from the pool - the thermometer inserted in the Telephone pool raises to 90
 Woodbridge clay - Fair
 Pumice Stone do
 Ferro Cyan Copper do
 Sulphate Antimony do
 Gallic Acid do
 Soap Stone do
 Barium Chloride do
 Black Flux do
 Fine Cast Iron filings ~~at~~ Poud, it is louder when in contact with the diaphragm
 Iodide Lead Fair
 Bi Tartrate Potash Fair
 Potassium Blue Fair
 Oxidate Soda Fair
 Sulphide Antimony Poud

Formic Acid	Fair
Michigan	Fair
Wash	Fair
Hesperia	Fair
Seed	Fair
Calc	Fair
Red	Fair
Copper	Fair
Pyrites	Fair
Lead	Fair
Iron	Fair
Alumina	Fair

This is a list of items
 and their corresponding
 values or grades.

This is a list of items
 and their corresponding
 values or grades.

This is a list of items
 and their corresponding
 values or grades.

[TRACING]

Atomonic Acid Fair - attracts particles can't try experiment without further
 Amalagam Fair
 Powdered Marble Fair
 Per Oxide Iron Fair, powder unless touching diaphragm
 Anthracine Fair
 Lycopodium Seed weak
 Sulphate Potash Fair
 Aniline Bed Fair
 Oxide Copper Fair
 Iron Pyrites Fair
 Litmus Fair
 Protochloride Tin - Good - it is powder when in contact with diaphragm

Sequo Oxide Iron Fair - This work the same way as Sequo Oxide
 lead. by the glass core heating -

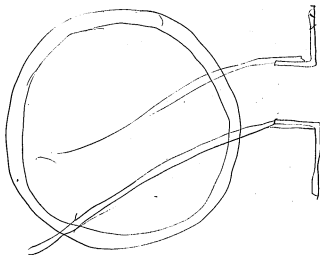
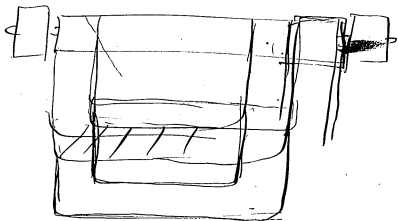
Sulphate Mercury - Fair
 Sequo Oxide lead - Telephone spool 25 ohms $\frac{18}{11}$ with Se Oxide
 in place of core and thermom placed on $\frac{16}{24}$ top of it
 and varies from 78 degrees to normally $\frac{24}{22}$ position to 90

Sequo Oxide when placed in glass tube with thermom
 inserted - and two permanent magnets placed on
 either side will show $1\frac{1}{2}$ degrees of heat

Per Oxide Iron will show $1\frac{1}{2}$ degree heat

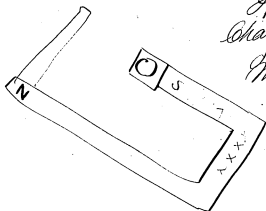
June 7, 1878

Telephone _____
Cha Katchelov
J. Amos
M. N. Ponde
A. A. Edson



Telephone June 7, 1898

A. A. Edison
Charles Batchelor
Johnnie
M. N. Force

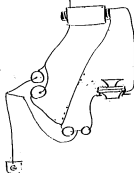
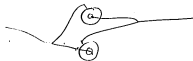


Speaking Telephone

June 4th 1878

Chas. B. Batsford

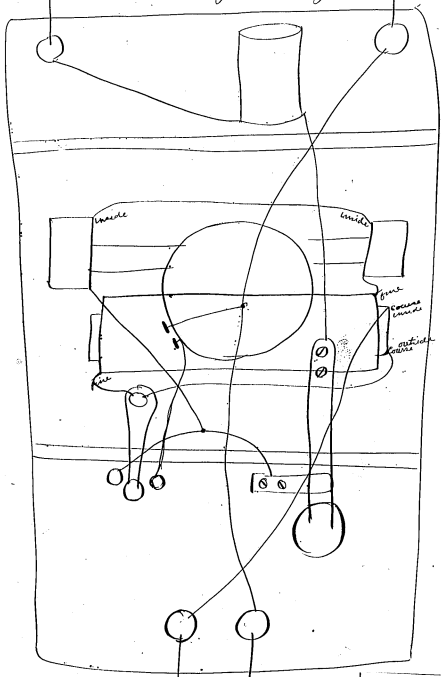
J. B. Batsford



Connections for Telephone
June 8th J. M. Muench

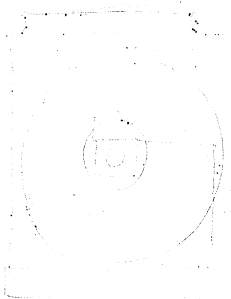
LINE

GROUND



Battery

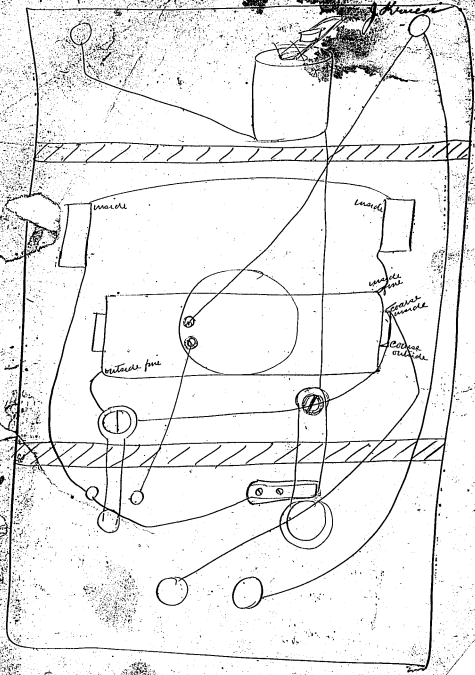
Letter of Introduction June 3th 1838
J. Russell



JRS

Sparking telephone

June 9th 1896
Sharkatchelo

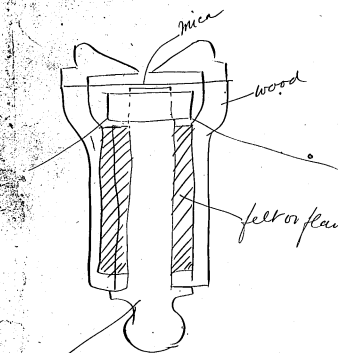


Speaking telephone receiver

June 15 1878

Chas. Batchelder

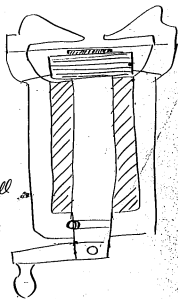
J. Krause



felt or flannel to electrify the core
Rubber

Hard rubber

Cranks to
help it
electrify all
the time

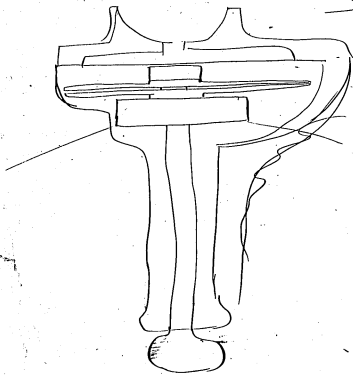


Speaking telephone receiver

June 10th 1948

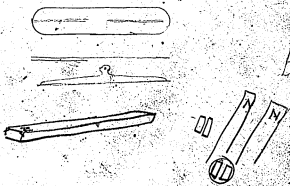
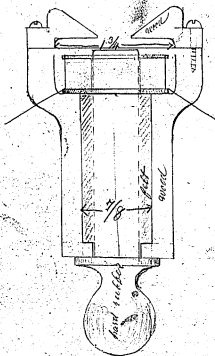
Chas Batcher

J. Krueger



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Speaking Telephone June 11
J. B. Wood

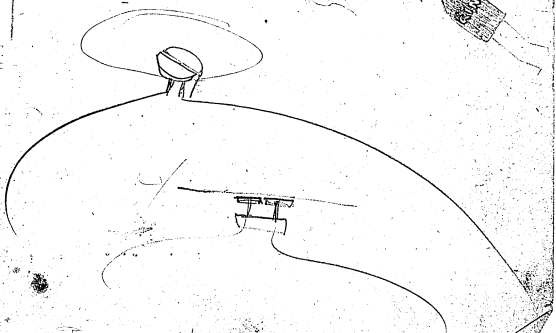


telephone

June 11th 1878

June 11th 1878

* * * * *



Telephone

diphramid of mica rubbed with
Emery Paper until glass is gone

Sulphate Mercury
rubbed on rough
side



Mar 11th 1878

Chas Edison

wants fair in nat

Platz as loud as carbon
telephone - does not make
a very great difference when
two wires or one.

Now are our brows crowned with frost
months our brows crowned with snow
Now is the winter of our discontent
made glorious summer by this son of York
and all the clouds that gather on our
house are in the deep bosom of the ocean
buried

Mary had a little lamb its fleece
as white as snow

Boston

Boston

Boston

B-

Boston

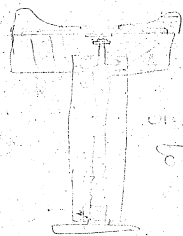
Boston

Boston

June 10th 1878

St. Louis

Telephone



connected

June 10 # 1878

aliphate mercury	nothing
sque oxide Lead	very good
sque copper	Fair
tinus	First Rate
sque Oxide Zinc	Fair
iron Pyrites	Fair
aliphate Potash	Fair
zinc powder	weak
potash or the like	

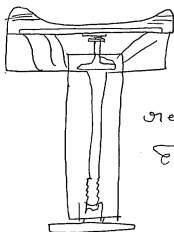
Continued on page 10

[TRACING]

June 10th 1878

W. W. Brown

Telephone



reewer
e

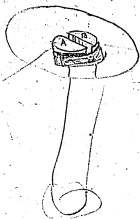
Sulphate mercury	nothing
Sesque oxide Lead	very good
oxide Copper	Fair
Litmus	Foot Rate
Sesque oxide Iron	Fair
Iron Pyrites	Fair
Sulphate Potash	Fair
Lycopodium	weak
Protochloride Tin	

June 10 #1878

Continued on page 10

~~Page 40~~

A and B D with space between and insulated by
with different chemicals inserted bet. a + B



C. P. Edison

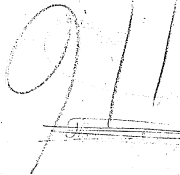
June 12th 1878

Sulphate Mercury	—	light liberative	
13 th Benzoic Acid	—	weak	con
Ferro Cyan Copper	—	Fair	non Con
Sulphate Antimony	—	weak	—
Ammonio Citrate Iron	—	weak	non Con
Barate Baryta	—	Fair	" "
Burnt Umber	—	weak	" "
Fluor Spar	—	Fair	" "
Indigo	—	lous	" "
Arsenate Ammonia	—	very weak	" "
Bitartrate Potash	—	Fair	" "
Arsenate Copper	—	Fair	" "
Carb Potash	—	very weak	con
Sulphate Calcium	—	" "	non Con
Silicic Acid	—	" "	" "

elephone



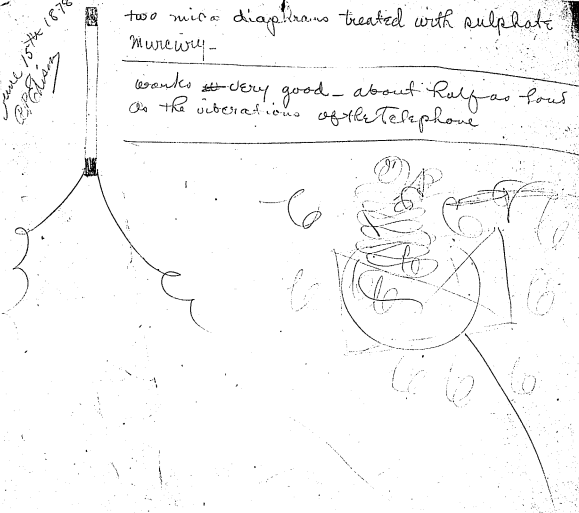
11



June 15th 1876
P.P. Collins

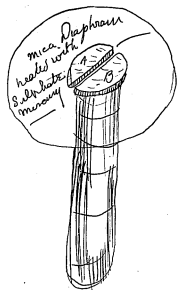
two mica diaphragms treated with sulphate
murexide-

works ~~is~~ very good - about half as loud
as the vibrations of the telephone



Sulphate Zinc	Fair	nc
Oxalic Acid	Weak	nc
Tannin	Fair	nc
Resin	Nothing	Con
Casein	Fair	nc-
Damon	Fair	nc-
Madder	Weak	nc-
Chloroform	Fair	nc
Paris Green	Fair	nc
Trigali	Weak	nc
Turner's	Very Weak	nc
Red Oxide	ditto ditto	nc
Whiting	Fair	nc
Milk Sugar	Fair	nc
Rotten Stone	Fair	nc
Sulph. Copper	Fair	nc-
Carb. Soda	Fair	nc
Antigalls	Weak	nc
Greenous Air	Fair	nc-
Bronze	Nothing	Conductor

[TRACING]



New Telephone Receiver
June 16th 1878
Chas. E. Edison

A and B @ poles of Battery with spermaciti inserted
between - with mica Diaphragm treated with Sulphate
Mercury

the above is fair to loud - and a little louder than
our mica diaphragm with platinum joint

no apparant change when spermaciti is out

With diaphragm without any Sulphate of mercury
but a very small amount of vibration can
be detected

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Black Flux	Fair	non	Con
Soap Stone	Fair	"	"
Woodbridge Clay	Fair	"	"
Phosphate Soda	weak	"	"
Ferrous Cyan Iron	ditto	"	"
Boric Acid	ditto	"	"
Protochloride Tin	very very weak	conductor	
Oxide Copper	Fair	non	Con
Sulphate Potash	very weak	non	Con
Chloride Barium	very weak	"	"
Lycopodium Seed	Fair	"	"
Desqui Oxide Fe and	powder	"	"
Arsenious Acid	Fair	"	"
Pepper	Fair	"	"
Carb Copper	weak	"	"
Iodide Fe and	Fair	"	"
Pithridge	Fair	"	"
Bicarb Potash	Fair	"	"
Grape Sugar	weak	"	"
Dichromate Potash	Fair	"	"
Ferrous Cyan Potash	Fair	"	"
Camphor	Fair	"	"
Black Lead	Nothing	conductor	
Silicic Acid	Fair	non	Con
Salt Petre	Nothing	"	"

S.P. Try this again

Bismuth Potassium	Fair	Non Cond.
Sal Ammoniac	Nothing	Cond.
Argols	Mildly Powd	Non Cond.
Asbestos	Very Weak	
Chromic Alum	Fair	
Sulphur	Weak	"
Protosulphate Down	Fair	"
Exbrine	Fair	"
Potassic Chloridum	Fair	"
Nitrate Ammonia	Very Weak	"
Arrow Root	Fair	"
Sulphur	Weak	"
Starch	Fair	"
Animal Charcoal	Fair	"
Brass filings	Nothing	Cond.
Iron Protosulphate	Weak	Non
Spermicite	Fair to low	"
Cocoa Butter	Fair	"
Scotch Snuff	Fair	"
Ferrous Sulphate	Fair	"
Chalk	Fair to low	"

[TRACING]

Bromide Potassium	Fair	non conductor
Salt Ammoniac	Nothing	conductor
Argols	medium bond	non conductor
Asbestos	very weak	" "
Chromic Alum	(Fair)	
Rashine	weak	" "
Potassium Sulphate Down	— Fair	" "
Dextrin	— Fair	" "
Potassium Chloride	— Fair	" "
Nitrate Ammonia	— very weak	" "
Arrow Root	— Fair	" "
Sulphur	— weak	" "
Starch	— Fair	" "
Animal Charcoal	— Fair	" "
Brass filings	— Nothing	conductor
Iron Potassium Sulphate	— weak	non "
Spermacile	— Fair to low	" "
Cocoa Butter	— Fair	" "
scotch Quiff	— Fair	" "
Ferric Cyan Polash	— Fair	" "
Chalk	— Fair to low	" "

Diaphane speaking June 15th 1878

Chas. B. Batcher

Try static electricity as transmitter
Make diaphanous of different substances.

Try Ferrous cyanide of potash, Bismuth
Madder, Sulphate Barite

Serous oxide lead, Mercurian

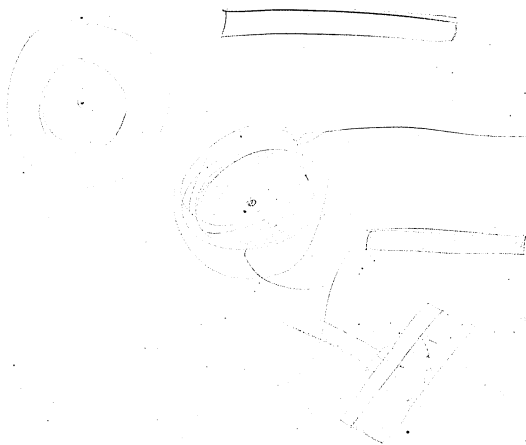
rubbed with Sulphate Mercury

In receiver of lamp with little
Coal in fourth & best battery

Speaking telephone
New Receiver

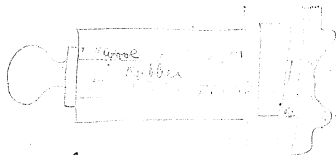
June 16th 1878

Chas. Satchel



Speaking telephone
New Receiver Static.

June 17 1898
Chas. B. B. B.
Hawaii



The above on

~~the~~ receiver, myca diaphragm
nothing at all nor as a transmitter
on line or in primary.

Diaphragm box of
Shield brass
Gum
Zin foil
Iron
Hard rubber
Soft rubber
Paraffin paper
Shells " "
Cork thick
" thin
Painted paper
Leather
Copper foil

Felt
Thin wood

No reset

Spending Telephone June 17 1898
T. A. C. D.

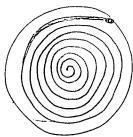
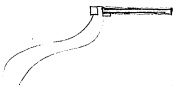
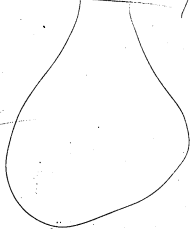


Illustration of parasitic Cere.

~~Mitryel patches~~



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Speaking telephone

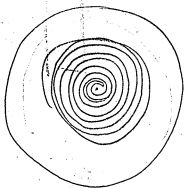
June 18th 1898

New Receiver.

Chas. Batchelor
Geo. E. Corman.

Take some of the finest
tissue paper and paste
a thin strip of tinfoil
on it so as to make
a long metallic band
this is to be laid flat
so as to make a number

of parallel lines which will be used as a receiver.



Speaking telephone
New Receiver

June 18th 1870

Chas. B. Batehela

Illinois



Sent one out but in lot that since draft
Receiver nothing. Shows nice

Put in Copper foil diaphragm and used as receiver with

Hard rubber core	—	nothing
Copper core	—	nothing
Steel core (magt)		nothing
Iron "		nothing.

Put in Iron diaphragm and used as a receiver with

Copper core	—	very low but good
Iron core	—	good but low.
Hard rubber core	—	I find I can get it without any core just with a diaphragm.

Speaking telephone

June 18th 1892

New Receiver

Edw. G. Batekin

Make receiver of sheet and one of small discs of
ferrotype plate punched out (Simon M. Fore)

Make receiver of two ^{plates} diaphragms with spirals of
tin foil in order to see if there is anything for
us in parallel circuit

Gave to Carman to make

Make receiver

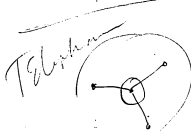
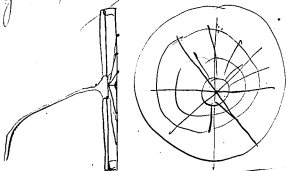
T. A. EDISON.

1

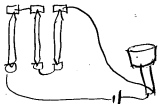
Menlo Park, N. J.,

187

Microphone
June 19 1878
T. A. Edison



Portland
Portland
Portland



Portland
Portland

127

127
514 12
470 62
4480
Chas Katcheto

Chas Katcheto

Chas Katcheto

Chas Katcheto

Chas Katcheto

Chas Katcheto

Chas Katcheto

Chas Katcheto

Chas Katcheto

Chas Katcheto

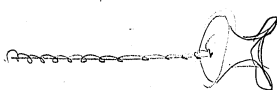
Chas Katcheto

Chas Katcheto

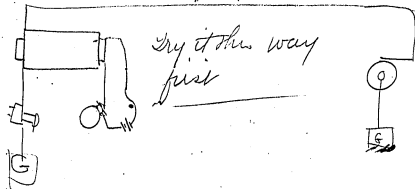
Speaking Telephone
New Receiver

June 19th 1898

Chas. Batchelor

 You wire wound with
copper and the end
of wire fastened
to a diaphragm

Electromagnet Receiver



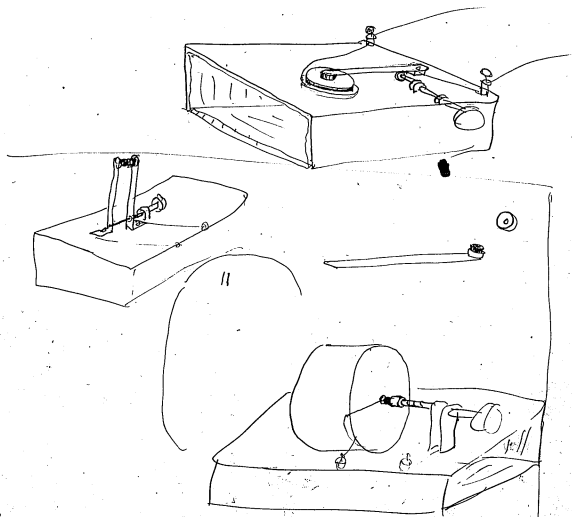
722

Microphone

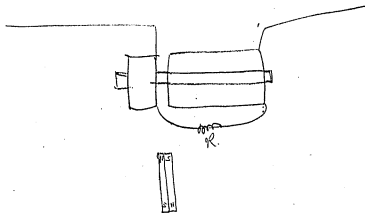
June 19. 1876

1st

Chapatchetov



June 19th 1946
Charles B. Bate
Harris



Make receiver of 2 bars steel in a spool with the
ends magnetized so as to neutralize each other

Speaking Telephone

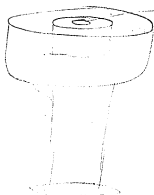
June 19th 1878

New Receiver

Chas. S. Tolson

Free make this:-

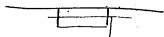
Marion H. Force



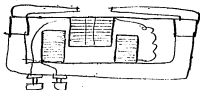
Enc made up of a number of discs
of ferrotype plate and dropped
in one on top of the other
do not scrape the shells
off them I want them useful
from one another.

Telephane

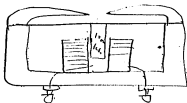
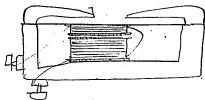
June 21 1878.
G.A. [unclear]



Receiver, works by ^{mutual} attraction of
coils one fixed & the other on the diaphragm
both in same current.

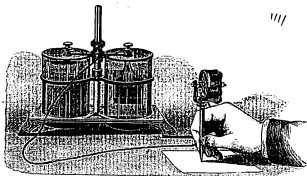


I will also mention that the fixed one
may be placed in a local circuit.



Section or axial
view

ELECTRICAL PEN AND DUPLICATING PRESS.

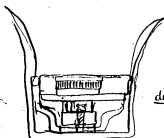


CHAS. BATEHEUR, General Agent for Foreign Countries.
P. O. Box 8207.

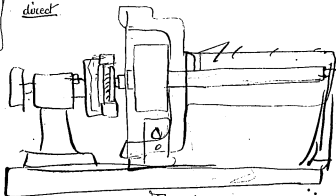
New York, June 21 1878

J. A. Casner

Suggestions



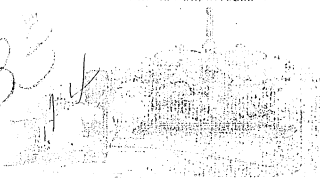
direct



Repeater

TECHNICAL PEX AND DEDICATED PRESS

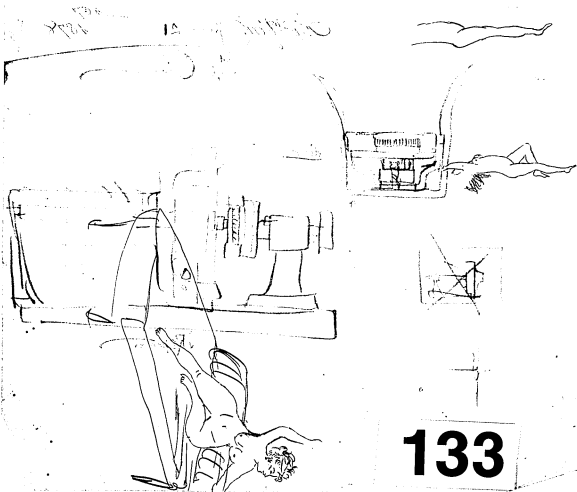
133



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ANN ARBOR, MICHIGAN 48106-1500

133

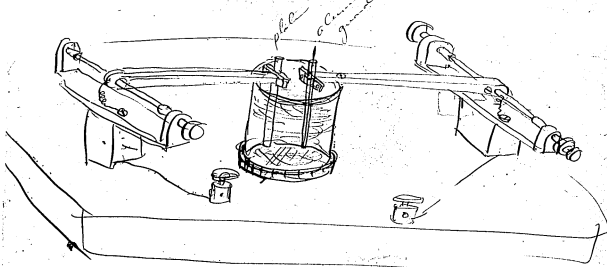
133



133

June 21 1878
F. Adams

J. Krussel
Apparatus for Polarizing a Telephonic
Gauss's Electrostatic



Wm. Mangin & Co. Boston
Care

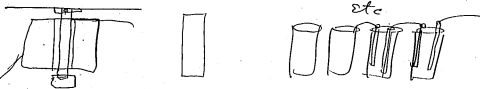
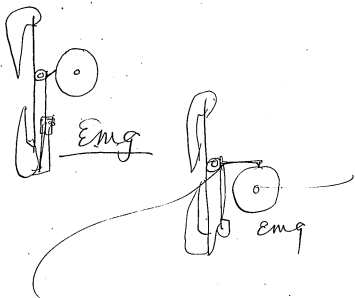
July 22 - 1878

Wm. Mangin & Co.
Boston



Telephone

June 23 1896
G. A. Edison

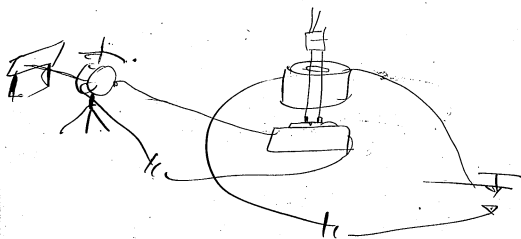
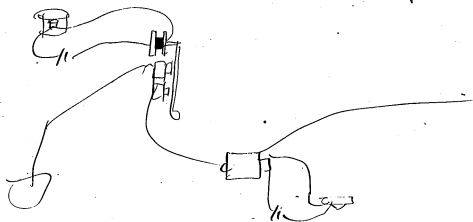


Expansion & contraction of
cylinders in an electric field
They are connected to a discharge
& serve to give motion to $\beta =$

Multiple Aluminum Platinum galvanization
for telephone ckt. =

Telephone

June 23 1878
T. Edison

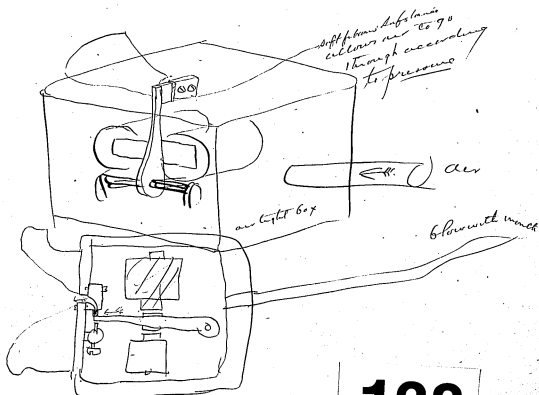


Telephone

air

June 23 1876

J. G. Edison
Chas. Knicker
J. Knicker



138

Telegraphic

June 29 1878

Chas. Batchelor

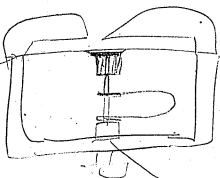
John Krousi

M. N. Force

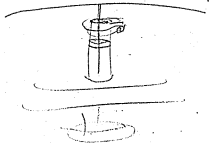
7 Ardmore

Emg

needle penetrates
slight amount of
catch wire

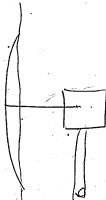


Witnessed



Personally appeared before me this day of
1878, the said Thos. A. Edson,
Chas. Batchelor, John Krousi, and Martin Force,
and acknowledged the above to be their signature

Notary Public



Telephone receiver

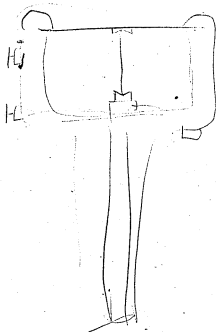
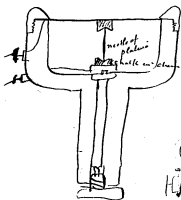
June 29,
1934

Chas. Batchelor

J. Kreuzer
M. M. Force

A. A. Edison

EMF or other action
Telephone receiver
with electrical isolation.



Personally appeared before me this _____ day of _____
1934, the said Thos. A. Edison,
Chas. Batchelor, John Kreuzer, and Martin Force,
and acknowledged the above to be their signature

Notary Public

140

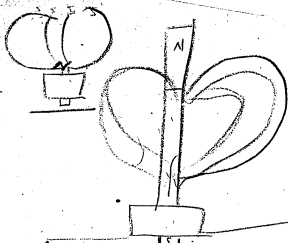
Telephone

T Edison
July 2 1878
T Edison



Charlatetete
Johanni
M. M. Ford
A. W. King





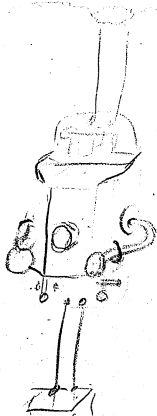
July 10 1878

J A Edison

Chas. Batchelor

J. H. Muesel

M. N. Force



J A Edison

July 10 1878

Chas. Batchelor

J. H. Muesel

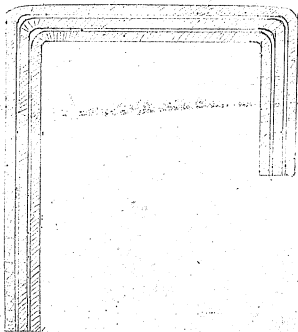
M. N. Force

J A Edison

142

Speaking

*and July 1910 1818
J. H. H. H.*

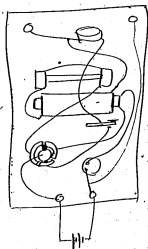
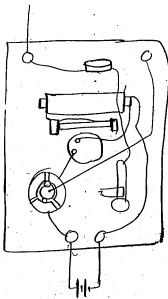
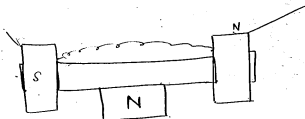
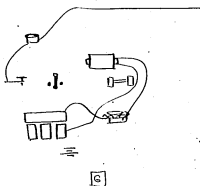


143

Speaking Telephone

July 23 ~ 1878

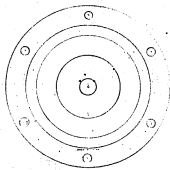
Katharine
Johnson



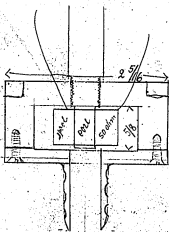
Speaking Telephone Aug. 11th 1878

Am

J. Johnson



201 March 1878

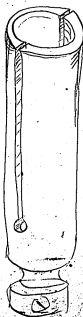
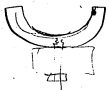
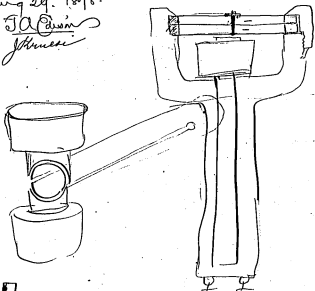


145

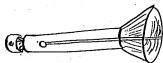
Telephone

Aug 29. 1898.

J. A. Brown
J. H. Brown



Resonant tuning fork.

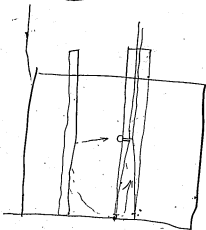
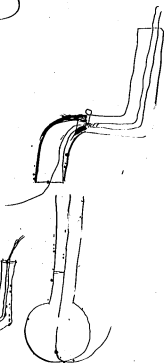
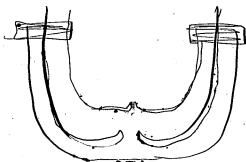


Funnel fork.

146

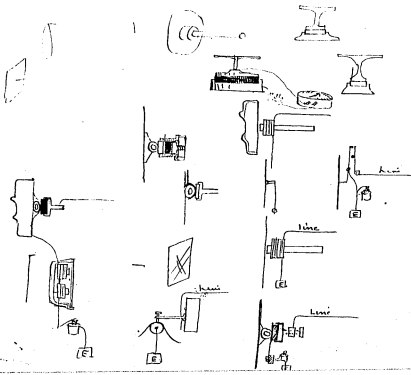
Aug 31 1876.

J. A. Dixon



Jac Edisa

~~Caro Patchito~~
previo a Sept 14 1877
J. H. M. S. J.



Telephone

Sept. 14th 1898

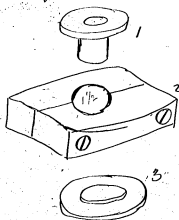
T. Edison

Chas. Batchelor

J. H. K. J.

used; have made a telephone transmitter
with a carbon button $1\frac{1}{2}$ inch diameter,
or as large as our cast iron telephones
will allow.

and make a brass die & press to press one
up so:



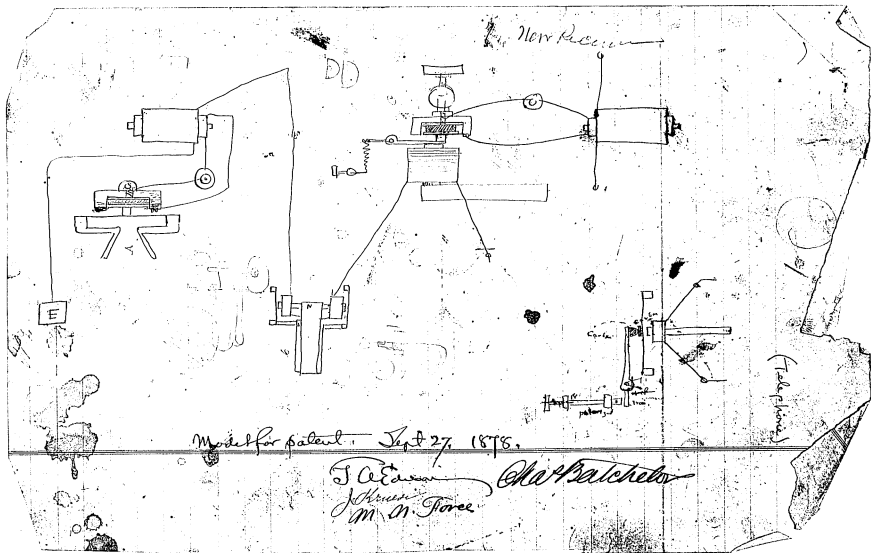
1 is Punch.

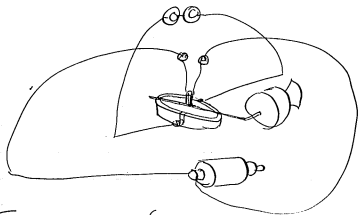
2 is clip that fit around 3

3 is bottom of die.

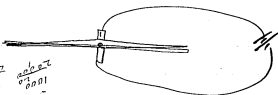
thickness of 2 about $\frac{3}{4}$ inch







Telephno.
 Sept 27 1878
 S. A. Edison



$$\begin{array}{r} 400 \\ 100 \\ \hline 500 \end{array}$$

$$\begin{array}{r} 200 \\ 200 \\ \hline 400 \end{array}$$

$$\begin{array}{r} 400 \\ 200 \\ \hline 600 \end{array}$$

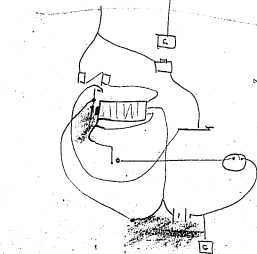
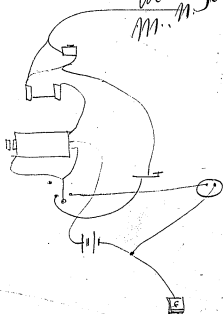
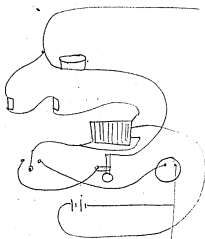
$$\begin{array}{r} 400 \\ 200 \\ \hline 600 \end{array}$$

$$\begin{array}{r} 400 \\ 200 \\ \hline 600 \end{array}$$

85

Speaking Telephone

*Sept 24th 1878
Chas Batcher
Edison
M. N. Force*



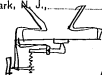
*Telephone with one
switch button*

T. A. EDISON.



Menlo Park, N. J.,

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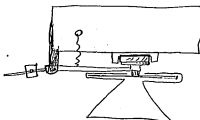
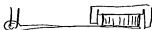


Telephone

Sept 27 1878

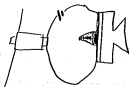
T. A. Edison

*Chas. Batchelor
John Brown
Martin Fox*

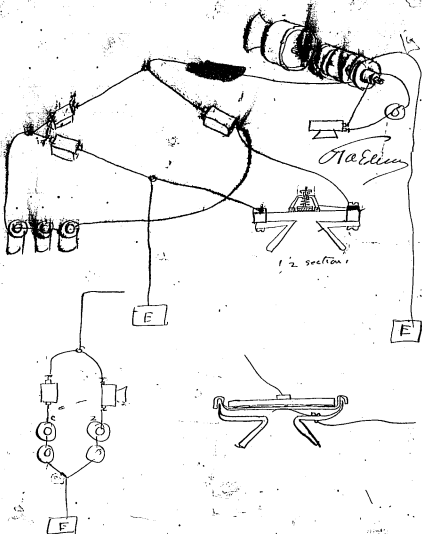


Personally appeared before me this ... day
the said Thos. A. Edis
Chas. Batchelor, John Brown, and Martin Fox
and acknowledged the above to be their signat

Notary Public.



Edison

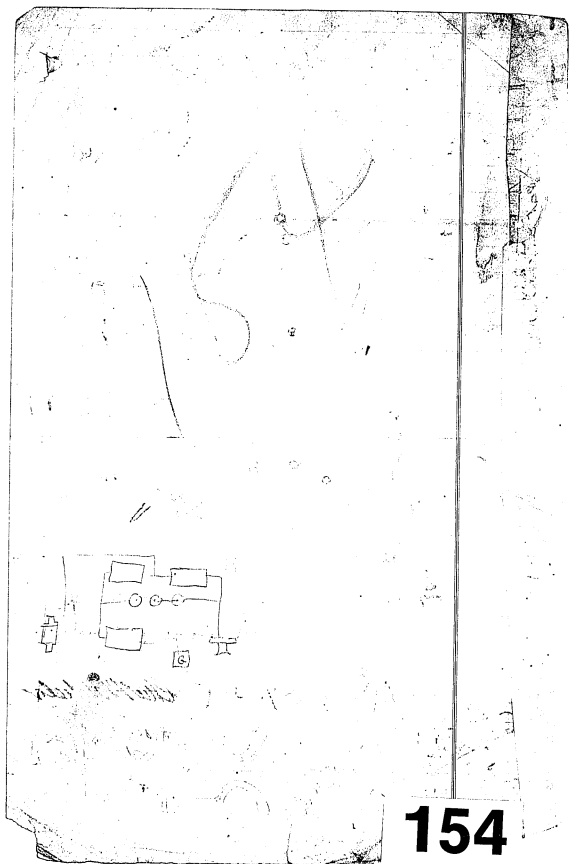


Model for Keyzi to make

September, 27. 1878 *Chas. H. Hatch*
H. H. H.
 M. M. Force

1. last
 2. first
 3. second



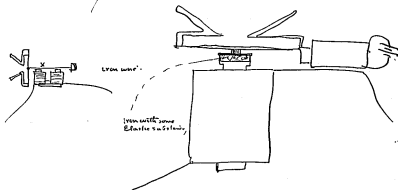
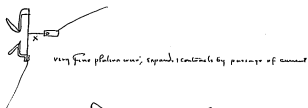
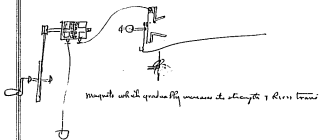
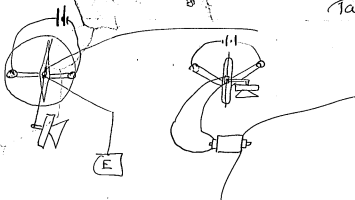


154

Telephone Current.

Sept 24 1878

Tadison



(2)

Sept 27 1878

Telephons Coustat,

J. A. Edison



diff. conducting fibers,

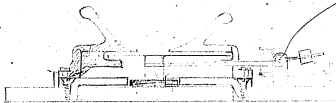
The Microphone *Sept 27th 1878*

J. Brincie

G. Carman

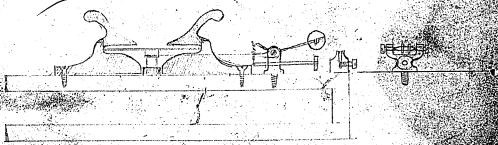
M. M. Force

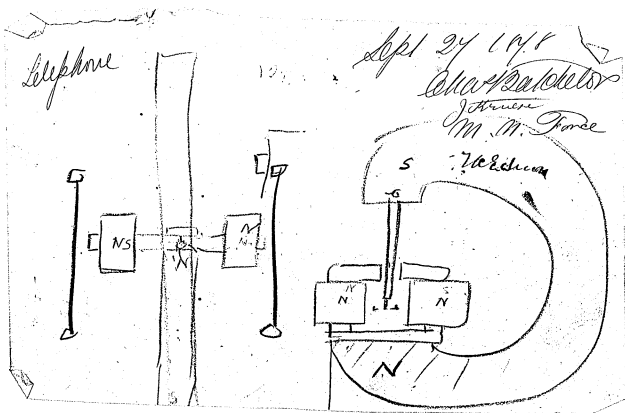
Char. Katchelor



52
75
205
114
1423
285
1140

J. A. Edson

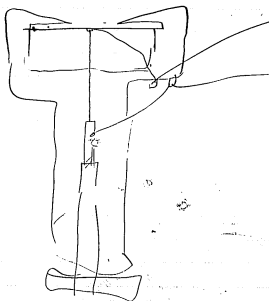




158

T. A. EDISON.

Menlo Park, N. J., _____ 187



Oct 2 1878 T. A. Edison

Chas. Batcher John Krousal
Martin Force

Platinum telephone received passage of the current
heat the ~~resistance~~ platinum expansion work

Personally appeared before me this _____ day of
Oct 1878, the said Thos. A. Edison,
Chas. Batcher, John Krousal, and Martin Force,
and acknowledged the above to be their signature

Notary Public.

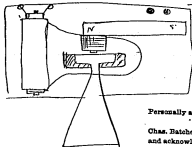
Notary Public.

T. A. EDISON.

Menlo Park, N. J., *Oct 2* 1878

Telephone

*J. House
Chas. Batcher*



*G. S. Carman
M. M. Force
T. A. E.*

Personally appeared before me this _____ day of
18 _____, the said Thos. A. Edison,
Chas. Batcher, John Krousal, and Martin Force,
and acknowledged the above to be their signature

Notary Public.



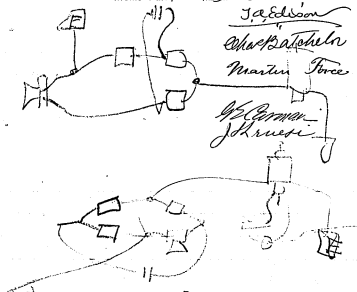
159

160

T. A. EDISON.

Telephone

Menlo Park, N. J., Oct 8 1878



Personally appeared before me this day of
 1878, the said Thos. A. Edison,
 Chas. Batchelor, John Kewal, and Martin Force,
 and acknowledged the above to be their signature

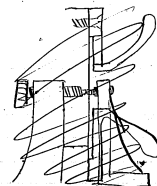
Notary Public.

161

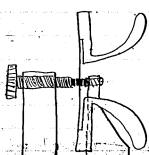
T. A. EDISON.

Menlo Park, N. J., Oct 9th 1878

W. C. Brown and Chas. Batchelor
 Will you make an instrument like this.



A diaphragm with platinum point on both sides and a screw on both sides in rigid heavy bearing that will not vibrate with diaphragm diaphragm edge of our transmitter diaph.



make points as heavy as the largest platinum both screws adjustable

Personally appeared before me this day of 1878 the said Thos. A. Edison, Chas. Batchelor, John Kewal, and Martin Force and acknowledged the above to be their signature

point as flat as possible

Notary Public.

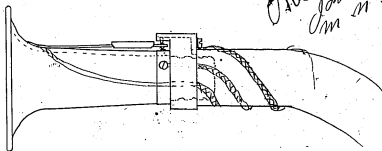
162

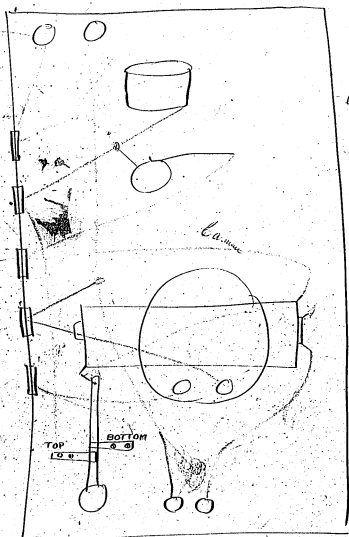
Telephone
Edison's Automatic Letter

Oct 14 1878

Charlottesville

J. A. Johnson
Am in Force





Oct 24 1946
Chorpatetev
J. K. K. K.
in a room
7A Edison

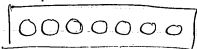
A. EDISON.

Menlo Park, N. J., Nov 1st 1878

Nov 1st 1878

Carbon Cup
Safety Camera

Chas Batchelor
M. N. Force
J. Krues



165

T. A. EDISON.

Menlo Park, N. J., Nov 7th 1878

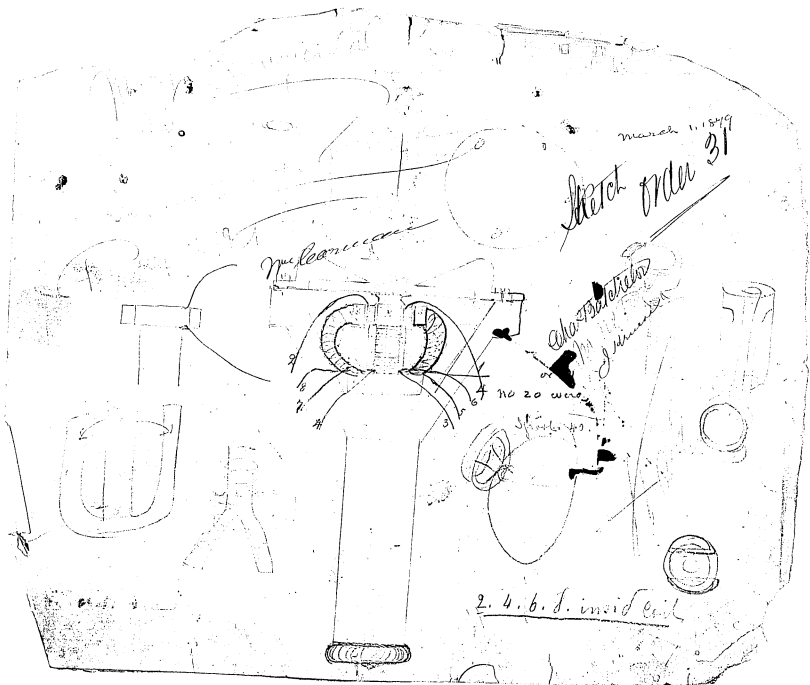
T.A.E.

Chas Batchelor
M. N. Force
membrane, use one of the
ones sent us for string telephones

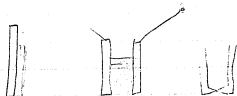
It may be a different coil will
do better if they are great ones.

J. Krues

166



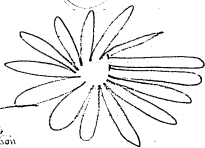
167



May 10 1879 908



Sketch a collection of use Cellulose & Cu point.
or Cellulose point & Glass bulb, as a lamp glass
forms Current



May 10 1879



Vol 14 - 169

Blake

Oct 18

T. A. EDISON,

Menlo Park, N. J.

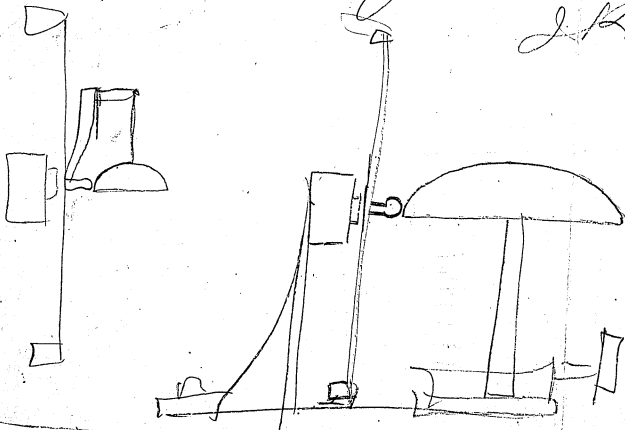
1880.

170

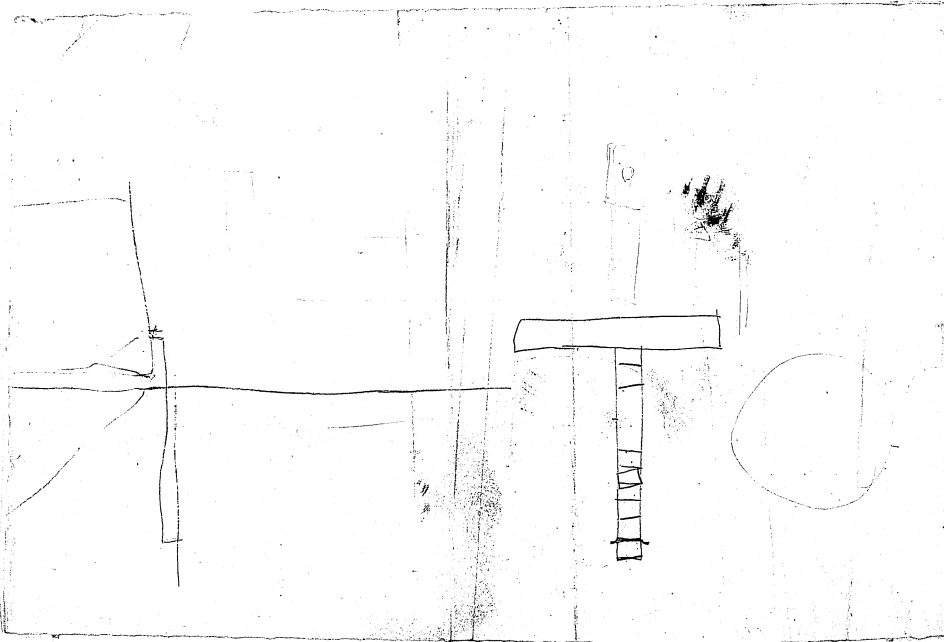
Telephotone

Aug 20th 1849

J.R.



170



170

EDISON'S LABORATORY

MENLO PARK N.J.

Sept. 20 1879

U.S. Pat. 111,717

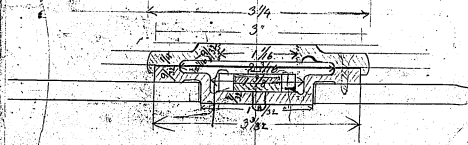
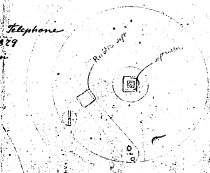
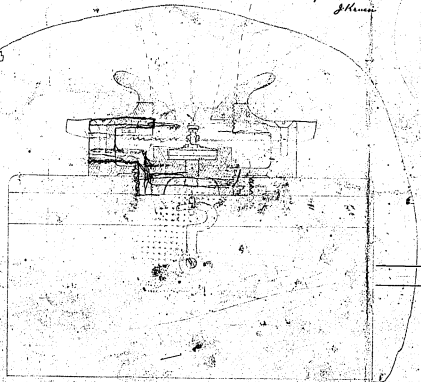
Fig 2

1/1 3/4

40

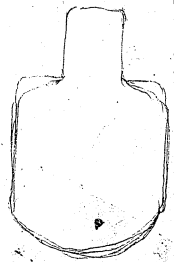
Edison's Carbon Telephone
Sept. 20, 1879
J. H. Mason

EDISON'S TELEPHONE
PATENTED
L. M. L. 111,717



171

172
14



10 copies of No 26 = 2183 in file

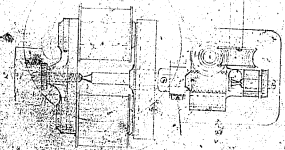
Bostra Engine Telephone

J.P.
Doc. 49

12

722
5.5

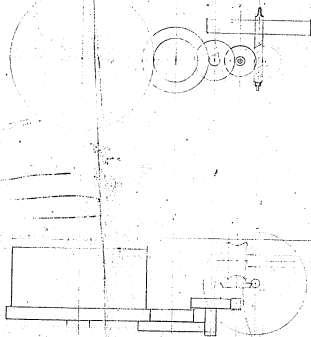
11



Edna Bergman
Dec. 79
JH

173

124



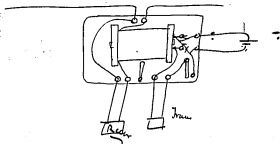
173

Notebook, Volume 15

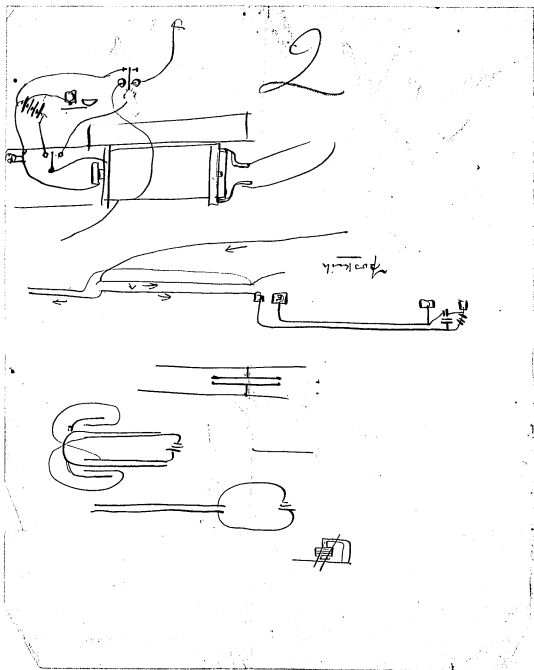
This volume contains only a few dated entries, covering the years 1875-1877. The notes and drawings are by Edison, Charles Batchelor, and James Adams. They relate to acoustic and multiplex telegraphy, the speaking telegraph and telephone, the phonograph recorder, and the etheroscope. The volume consists of 174 numbered, unbound leaves.

Missing pages, found in facsimile in the Telephone Interferences: 49, 79-81, 83, 90, 111, 117-118, 152.

Missing pages: 1, 3, 5, 7-8, 37, 41, 44-45, 169.



7 a Edun
Chap Batehler



2

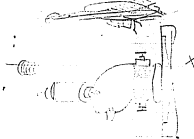
T. A. EDISON.

Menlo Park, N. J.,

1877

Get my patent in which describes class partition Grit
Cells.

to
Prescott's Book



Oct 21 1877.



Oct 21 1877

silver coated mica valve - special
hot air film on front of
Valve - 1/2 inch diameter



glass with mica film

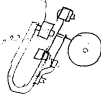
Oct 21 1877

T. A. EDISON.

Menlo Park, N. J.,

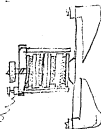
1877

to
Prescott's book



Phonograph recorder

Aug 17 1877

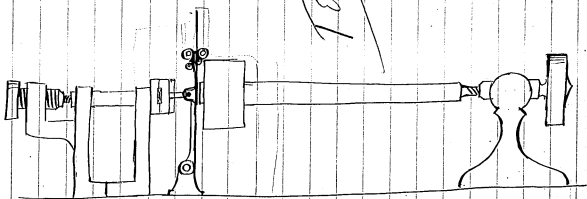


Aug 25 1877



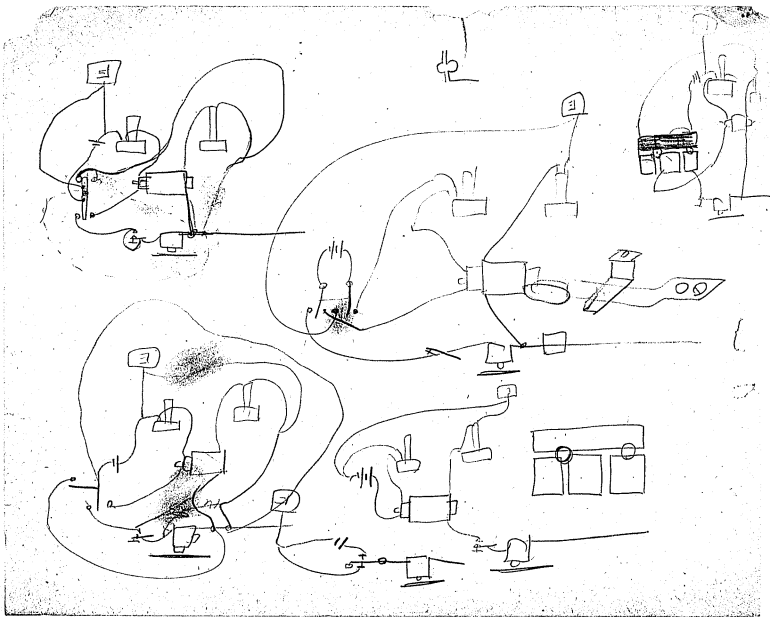
4

6

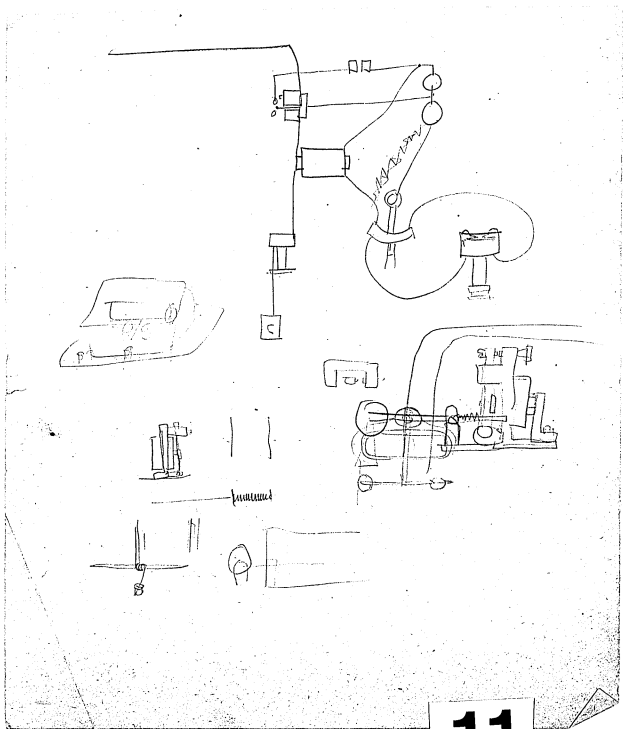


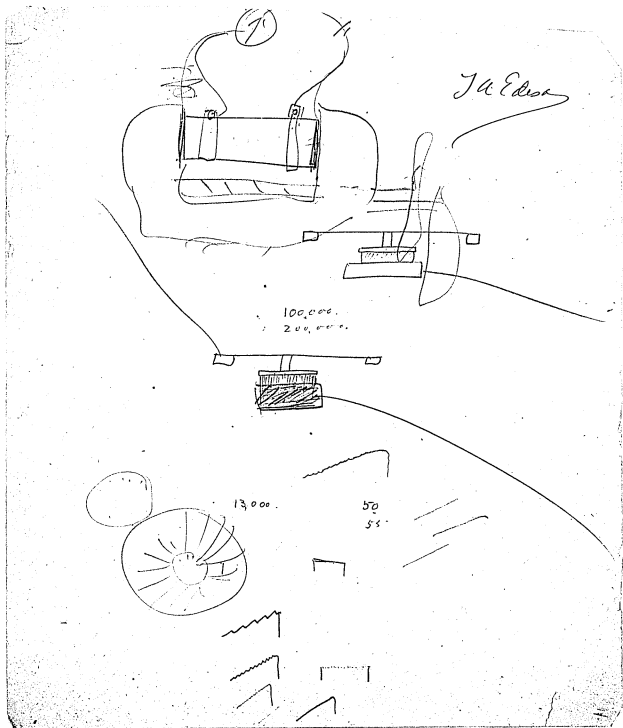
Flypen

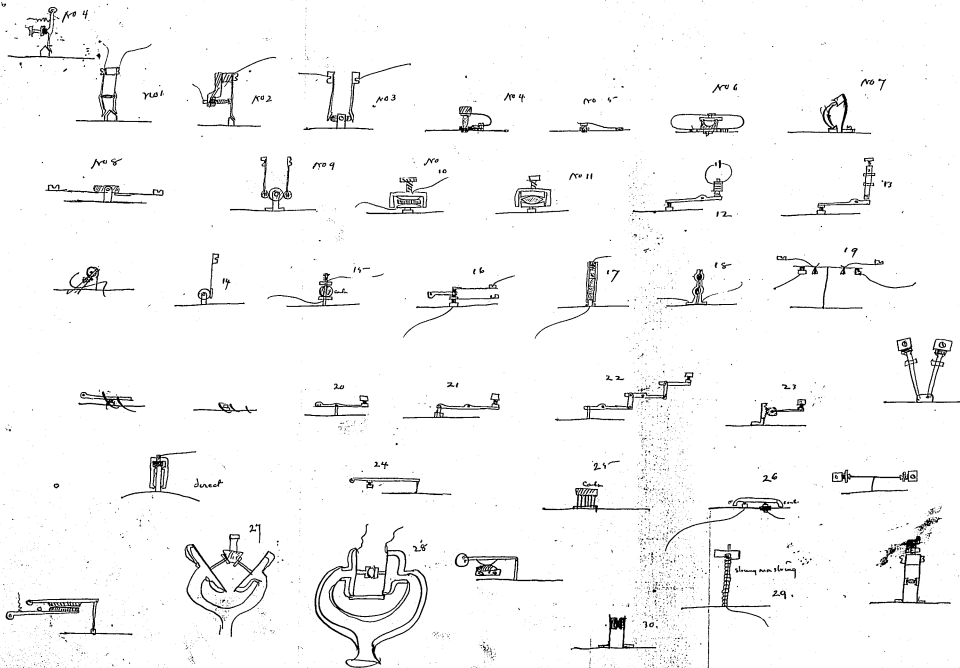


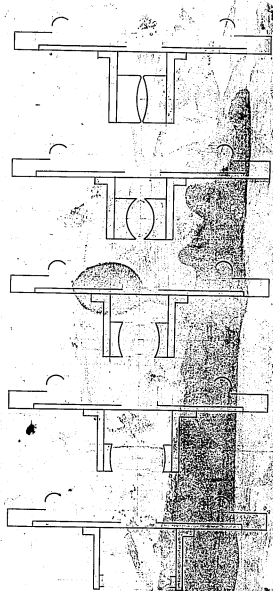


10

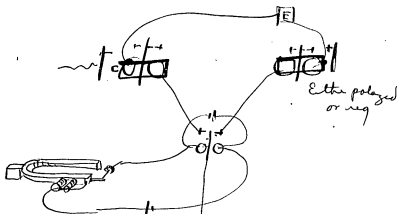




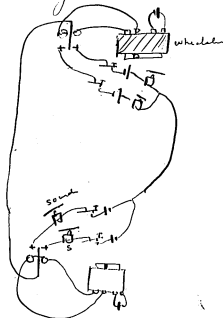




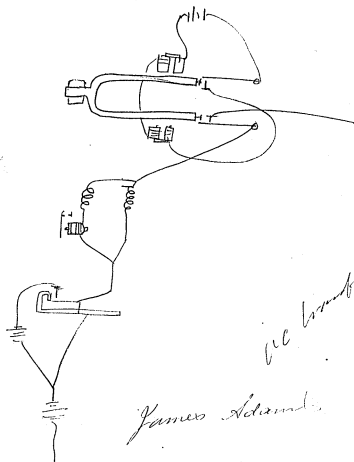
13



try this with a wheelstone shun

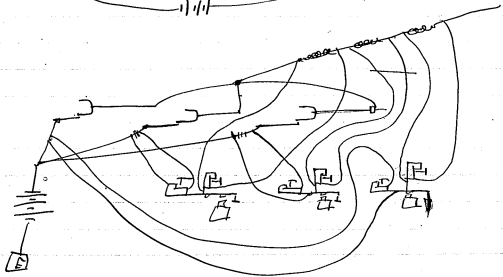
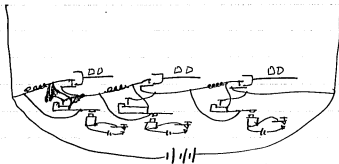


See if can be regulated
Synchronous only so as to
get writing of reg sounds
won't do! put 6 disk point
to each key and ccha
battery to work reversible



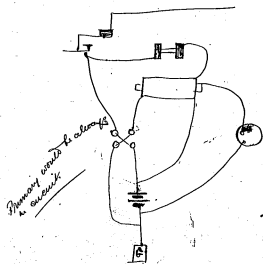
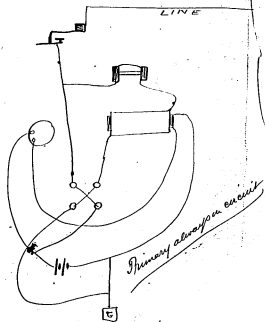
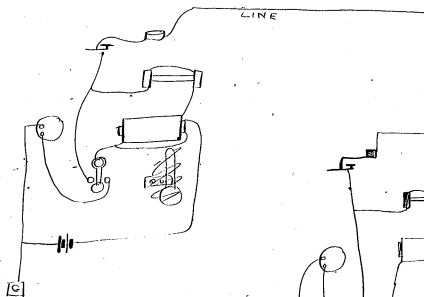
ac lamp

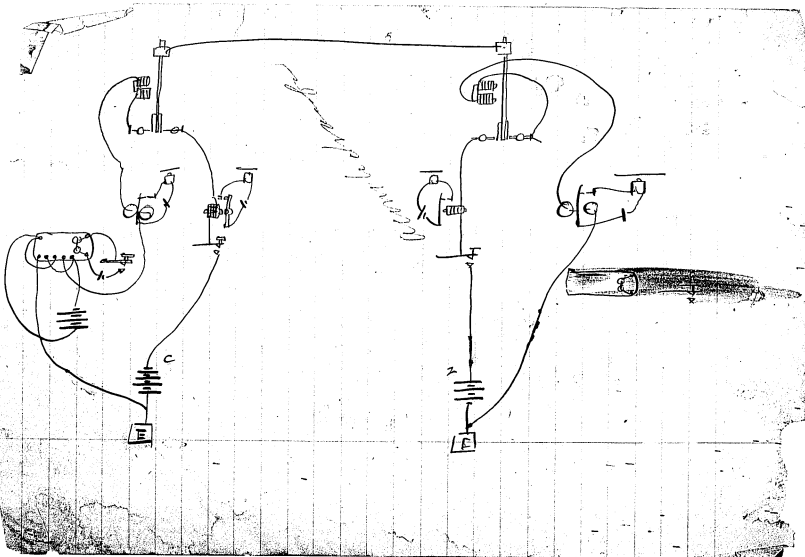
James Adams

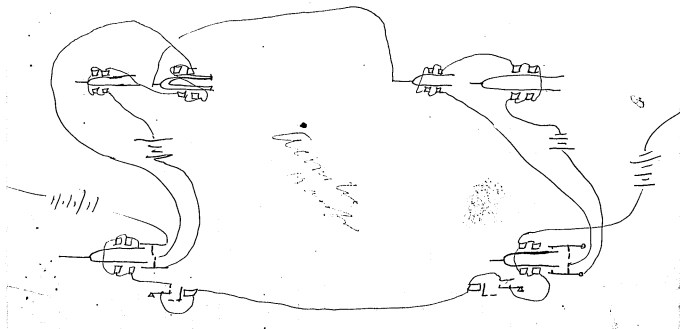
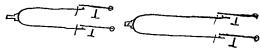
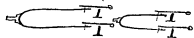


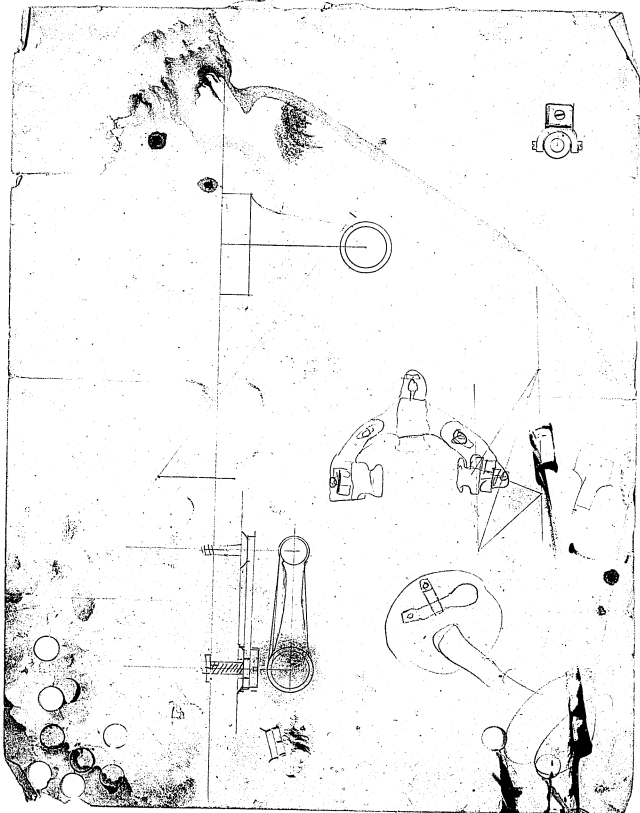
James Adams
W. W. L. C.

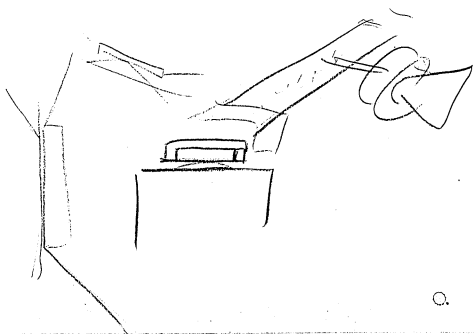
Aug 16, 78

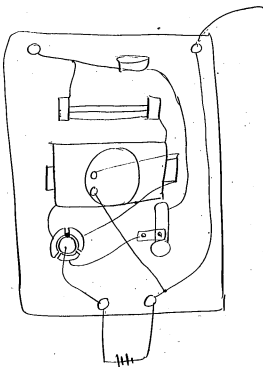






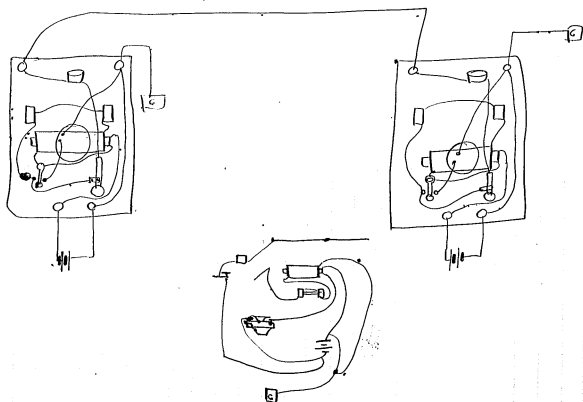




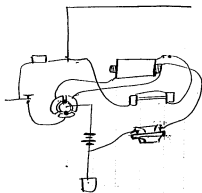
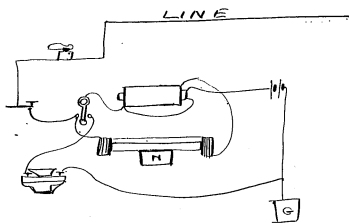


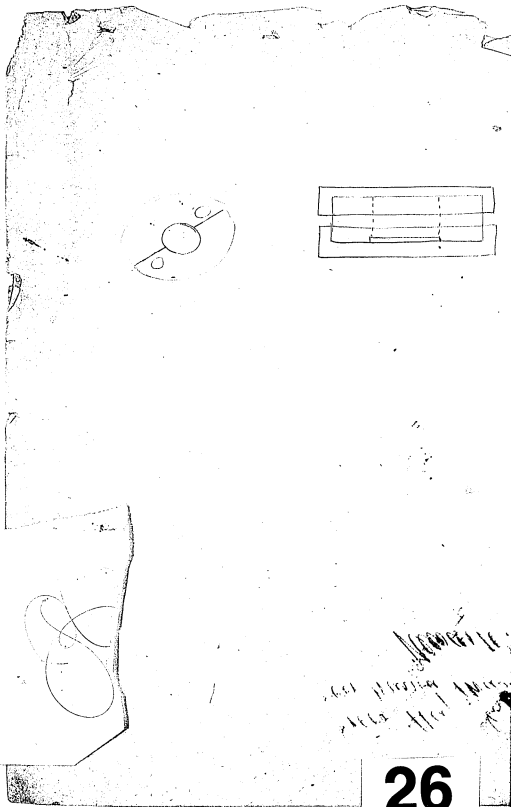
got to cut it up
show trans or
primary stat.

711



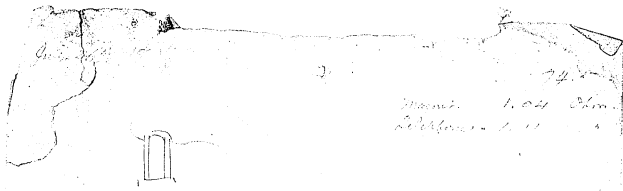
we





25

26



74.
 Magnet 1.04 Ohm
 Telephone 1.11 "



6.5

Telephone	11 of 1st	Telephone	78 Ohms
11.11	14		
20 "	10.5 "		
50 "	21 "		

with magnet of high mag.

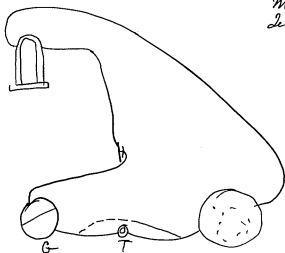
Telephone ... 2.2 Ohm
 Magnet ...
 Magnet ... 38

[TRACING]

July 26th

74

Magnet 1.04 Ohms
Telephone - 1.11

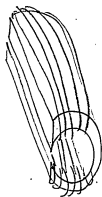
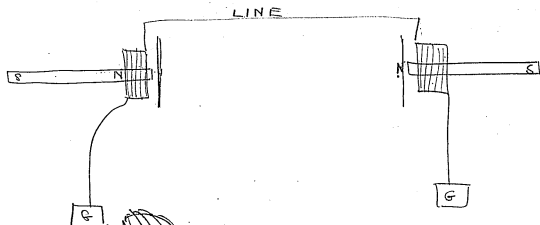


61.5

Telephone	Defl	11° of Gal	Telephone	78 Ohms
Add 10 Gr	"	14° "		
" 10 "	"	14° "		
" 20 "	"	16.5° "		
" 50 "	"	21° "		

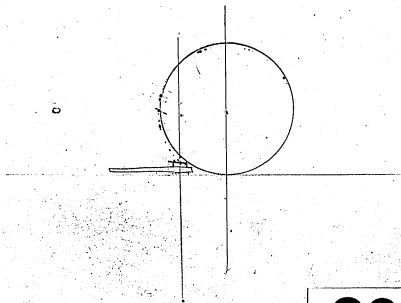
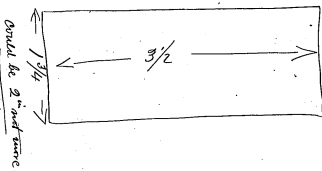
With magnet of high mass

Telephone	Defl	61 1/2 Deg
Magnet		
Magnet & Tel	D.	28

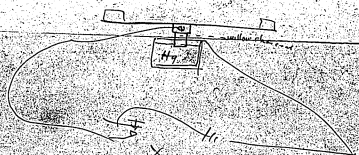
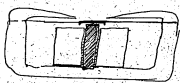
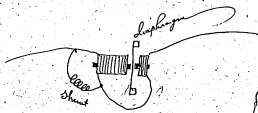


Handwritten notes:
 27-4
 1
 200 turns
 around
 primary
 100 turns
 around
 secondary

Size of
630
Coll for speaking telephone Induction coil given
to Bergmann in Book 116



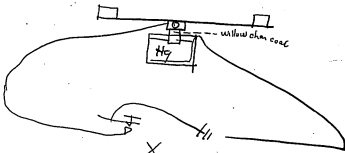
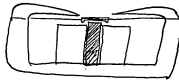
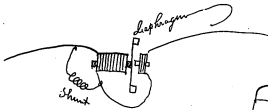
Speaking telephones



if present by key add
to be telephoned
get back

30

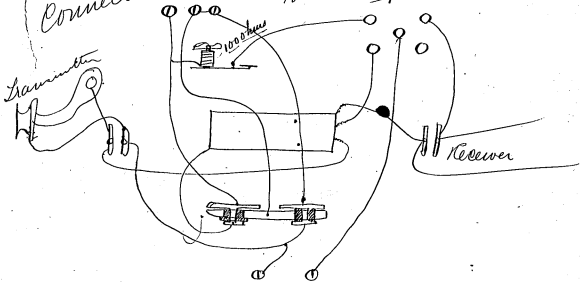
Speaking Telephone



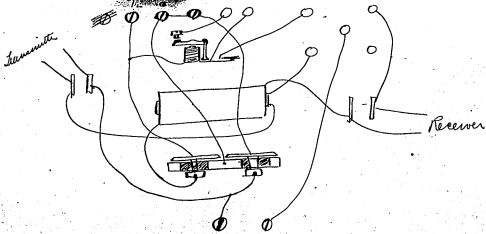
frequency by key add
Carbon Telephone & see if
get talking =

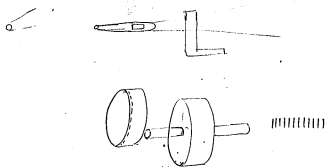
Edison's
Speaking Telephone

Connections on desk pattern as
made by G. Phelps



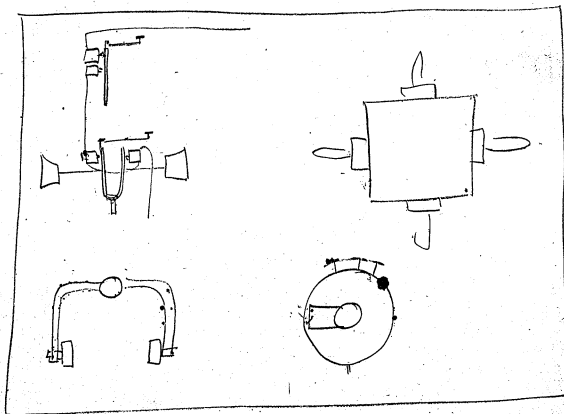
is sent to you

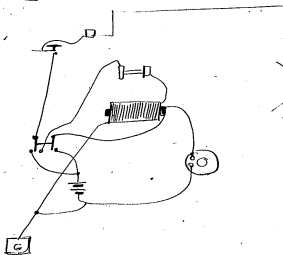
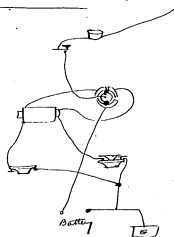
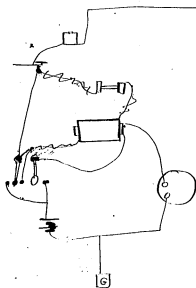


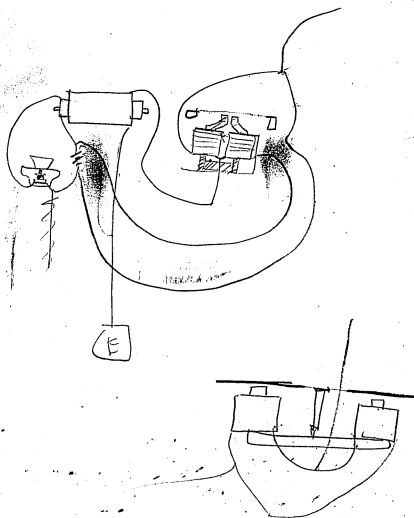


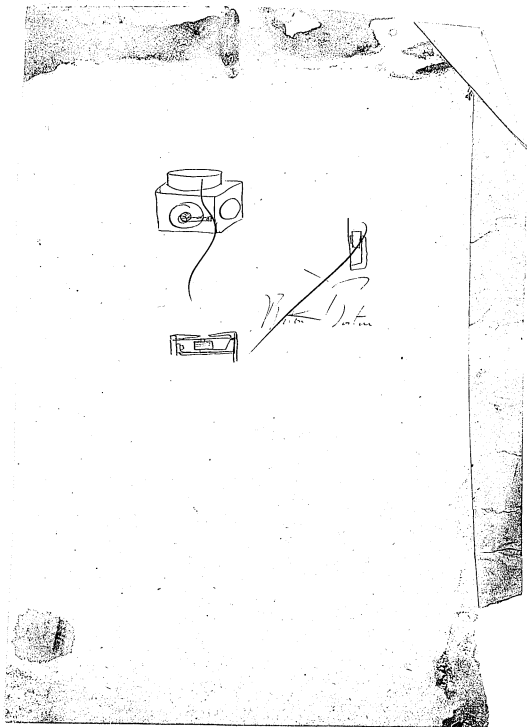
10.000 öhms

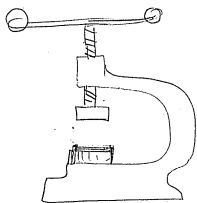
James Adams
Johns Hopkins





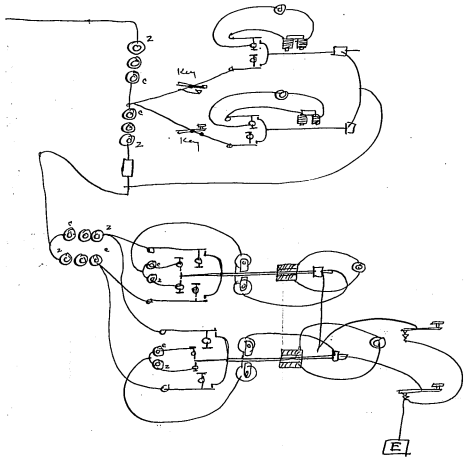


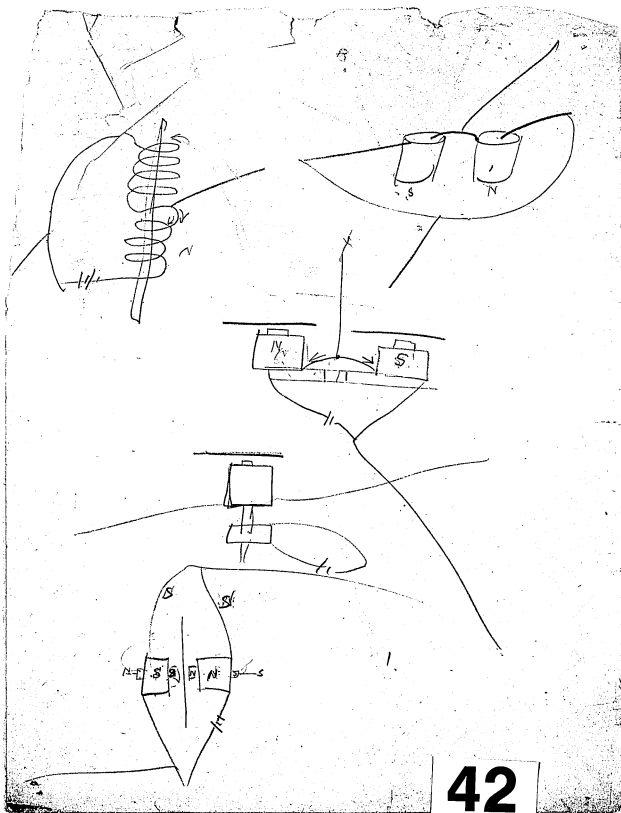


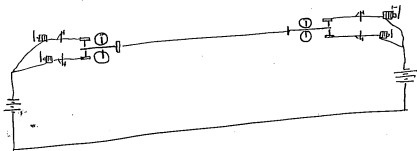


M. L. D.



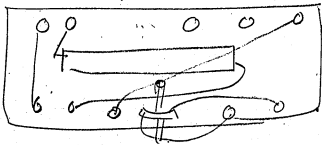
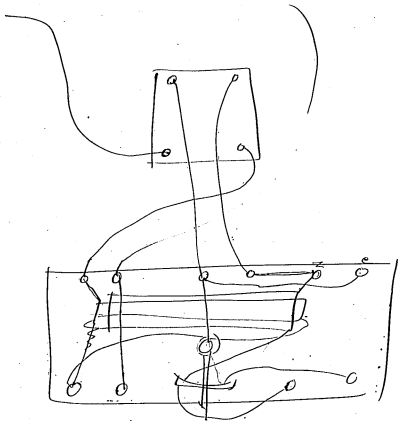




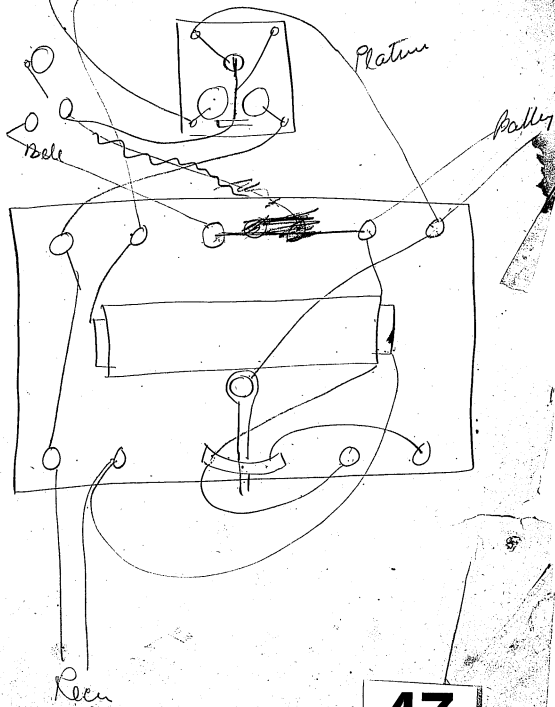


43

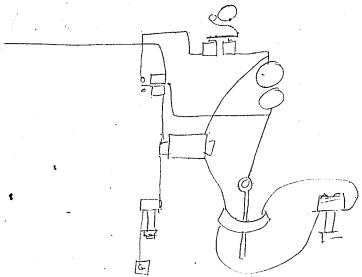
64472

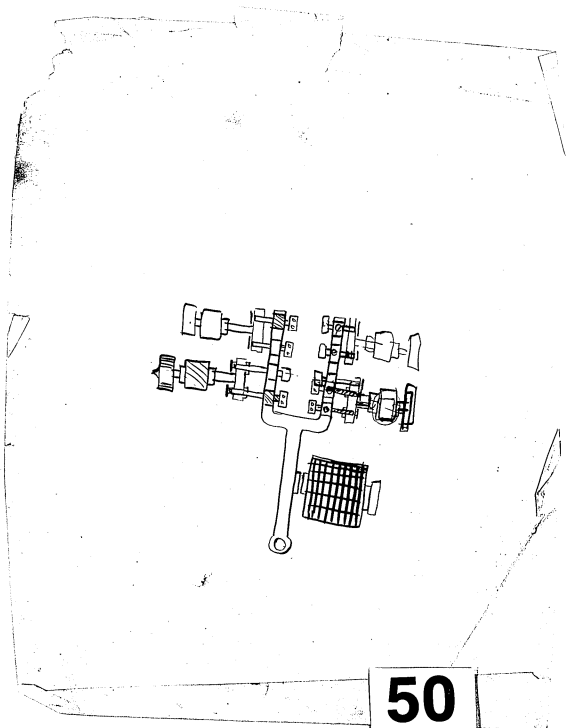


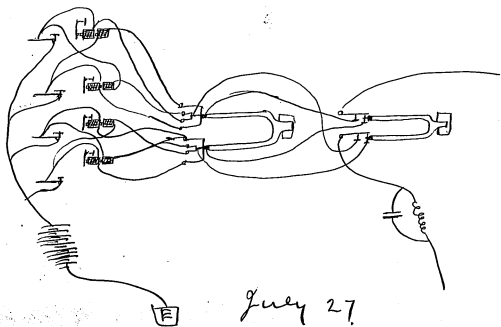
246



643

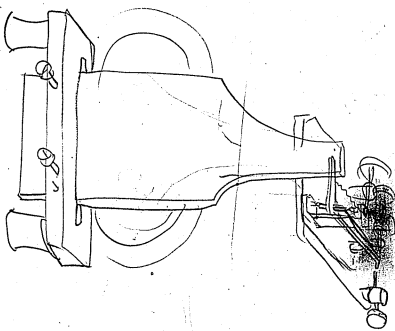
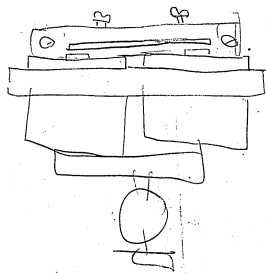






July 27

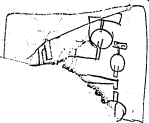
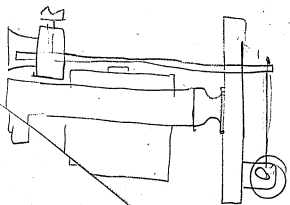
Adams



Will enough to reach
from cars to cars

iron plates

1/2 inch
will amount to



52

Newton

How about magnetic punching machine? How about endoscopes, about my acoustic applications,
was Austin Road for all right, write specifications for two models already there and get the
metal from Phelps

Mention in the Spky application having knowledge of other some conductors with non conducting or nearly so substance
expressing attention on magnets, describe & draw this, or some patent, show this & claim

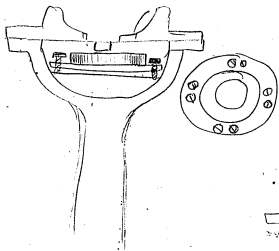


Ironman uniform get papers = see thy pen
they - " get now Clott & Handley
get the his - application sent me by Serrell.
Write Spier or Eaton for Submarine Telescope

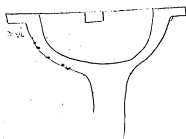
James Adams

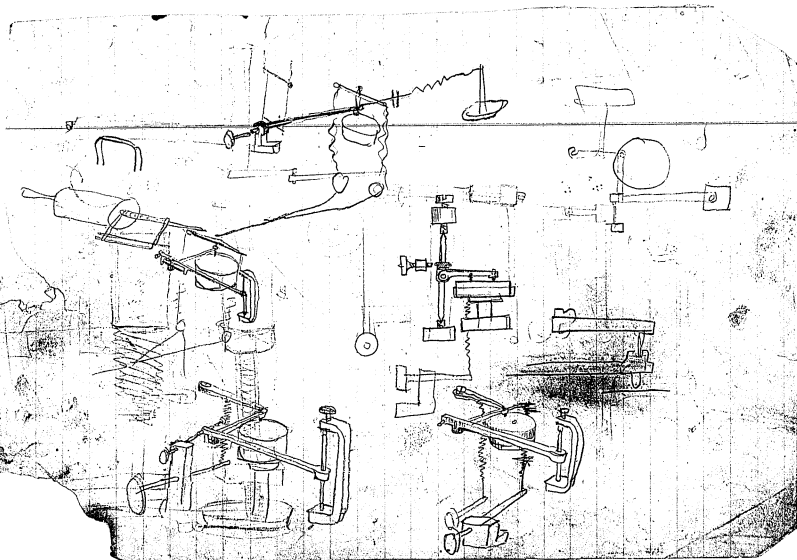
Speaking telephone

Chaparralito
J. Blumeri

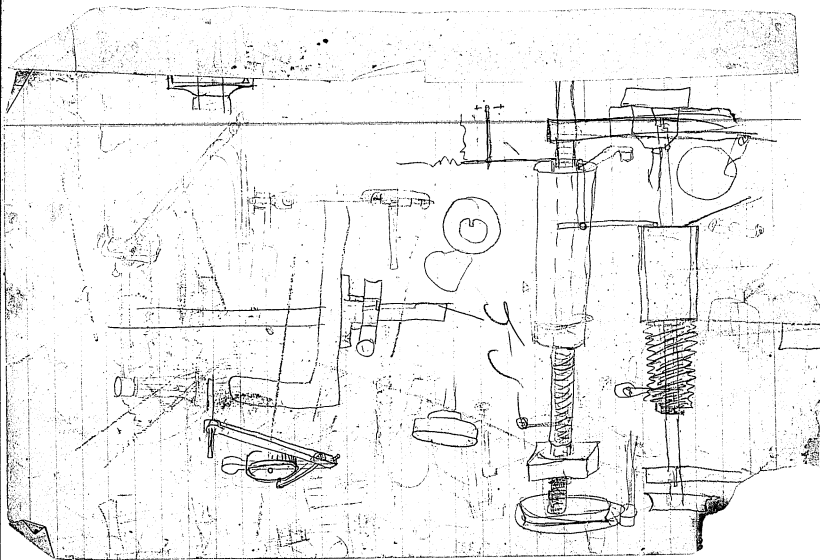


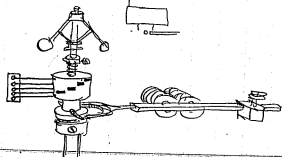
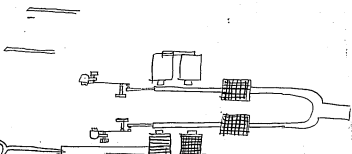
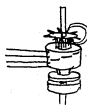
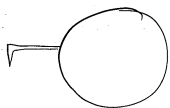
Make one like this

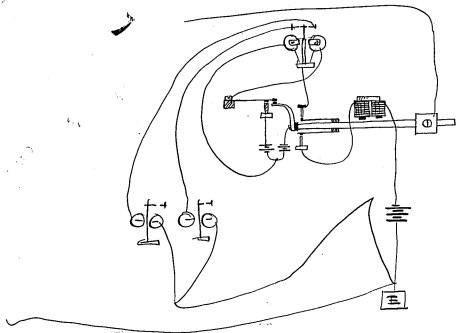




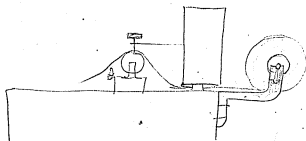
55





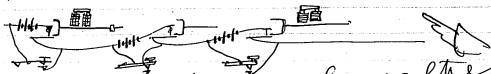


57

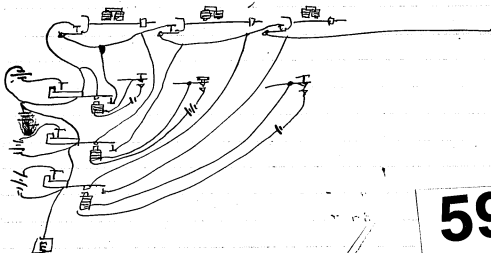


58

Convent Model
Convent also model,

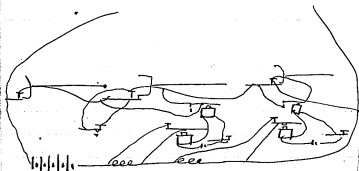
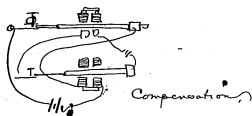


See if g have the
Convent, or model made



59

EDISON'S
 Electrical Pen and Duplicating Press Co.
 41 DEY ST New York.
 Chas. Batchelor
 GEN: MARG 30 Box 3907.



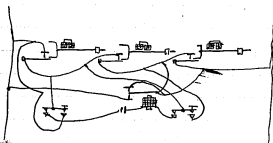
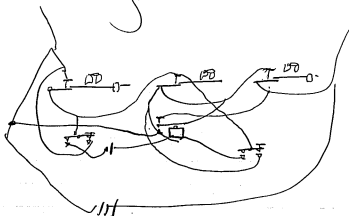
60

EDISON'S
Electrical Pen & Duplicating Press Co.

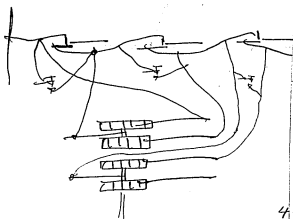
41 DEY ST New York.

Chas. Batchelor
Genl Mgr 305ex 3207.

Chas Batchelor
Bring



Q



40. $\frac{48}{160}$ 20.

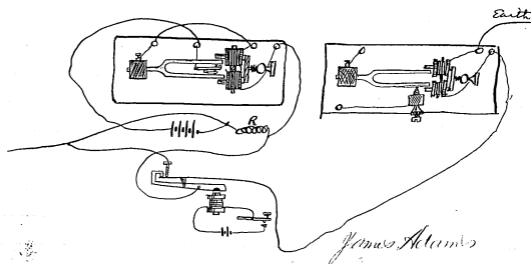
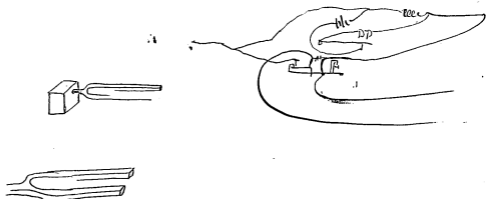
16 $\frac{48}{150}$ 35.
210
280.

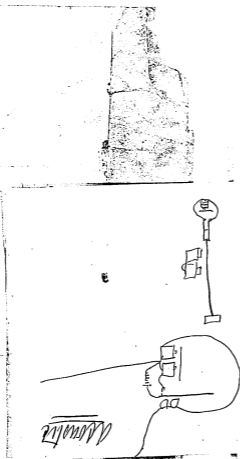
Sf. oil city
Ch at Prod Sp.

Gold & Stock Telegraph Company,
Western Union Building.

Marshall Lefferts, President.
Henry H. Ward, Secy & Treas

New York _____ 187

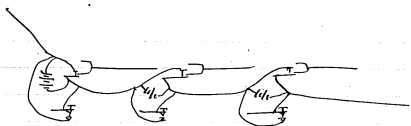




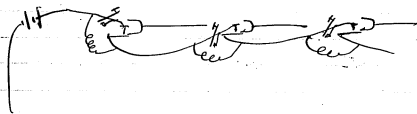
63



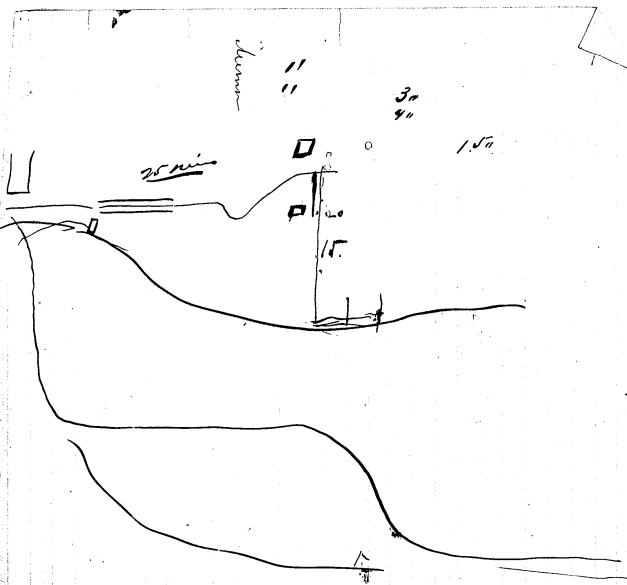
64



See if I have the
Concated -

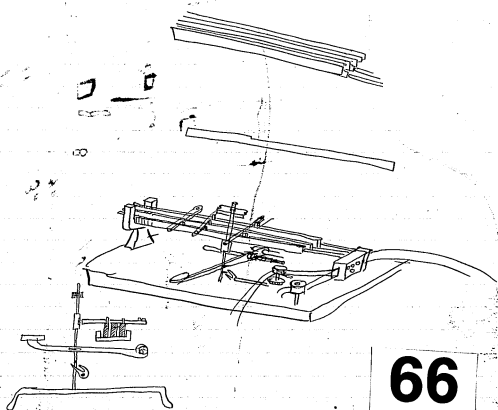


James Adams

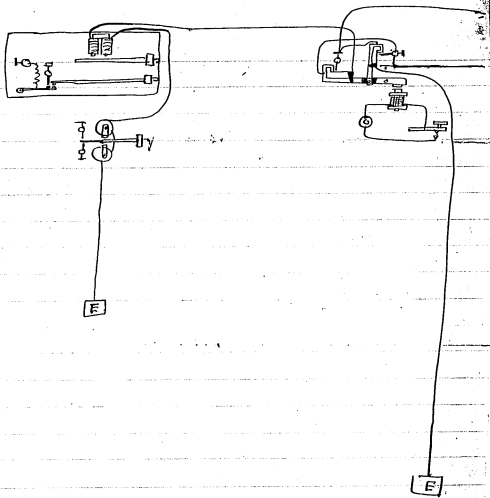


66

66



66



South 32nd St Philadelphia
P.A.

67

G. J. Murray
Model

\$15.

OK
Recd

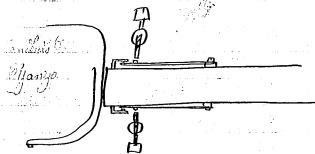
10

67

T. A. EDISON,

NEWARK, N. J.

10 & 12 Ward St.

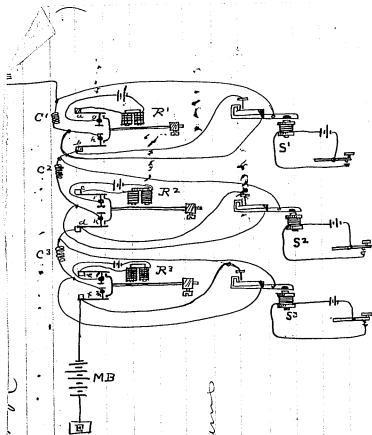


Holes 1/2 in. apart for the magnets
to be drilled by.

Handwritten notes, possibly 'Handwritten'.

Handwritten notes, possibly 'Handwritten'.

68



James Adams

69

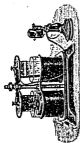
Edison's Electrical Pen & Replicating Press Co.

41 DEN STREET,

NEW YORK.

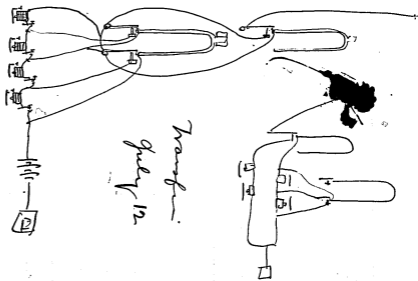
MANUFACTORY:

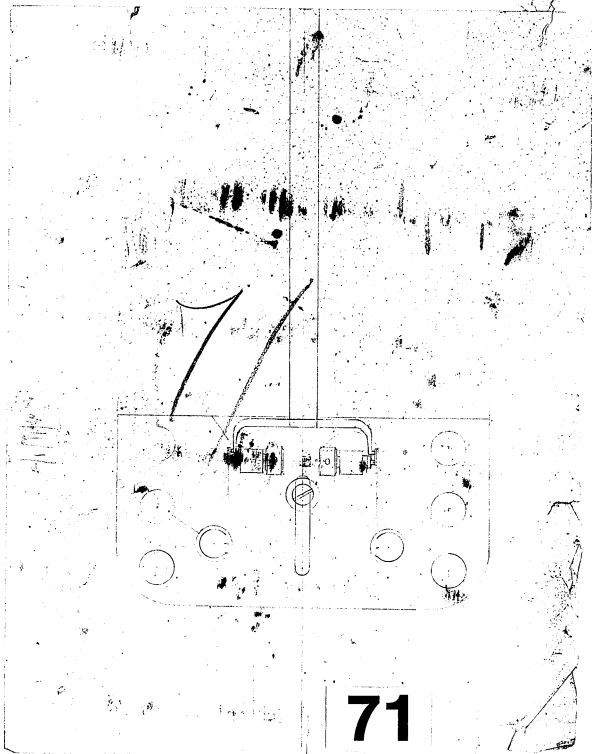
MENLO PARK, N. J.



P. O. Box 9207.

New York, 1897



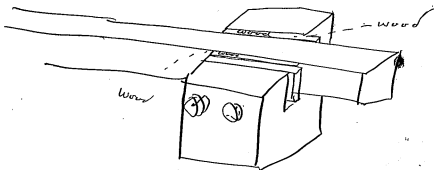


71

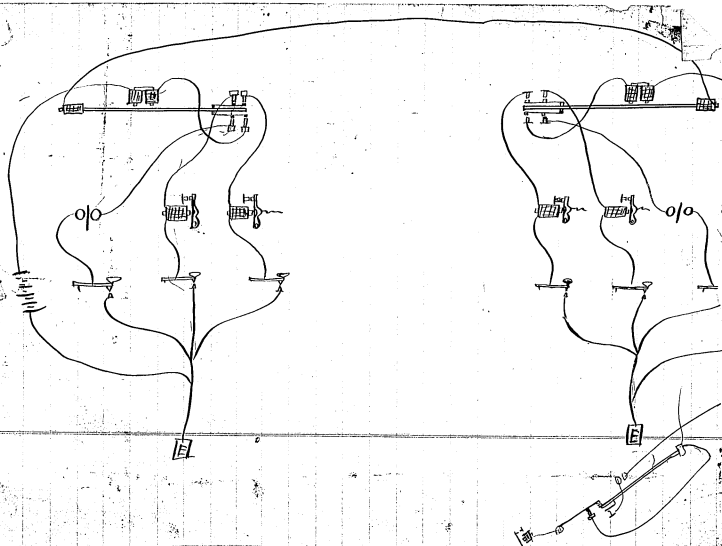
February 6th E. Purdy

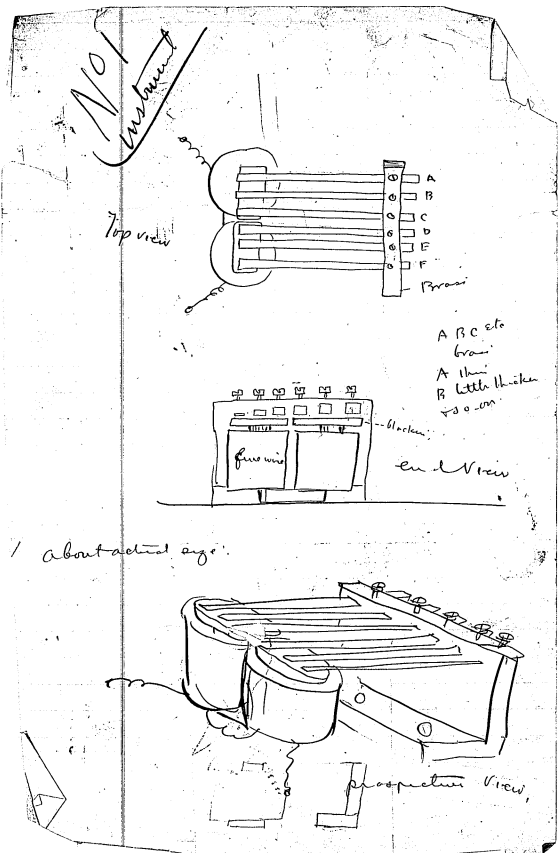
Murphy

Also make me several boxwood
pieces - so as to make the transmitting
gears less rigid

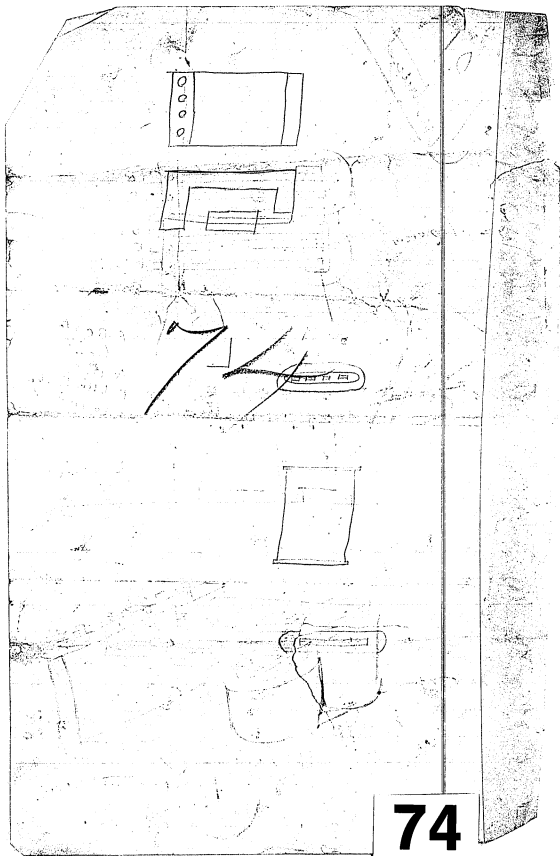


72



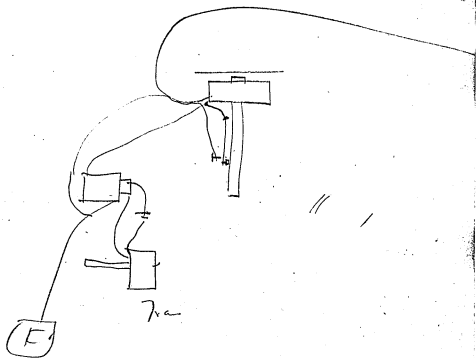


1 about actual size:

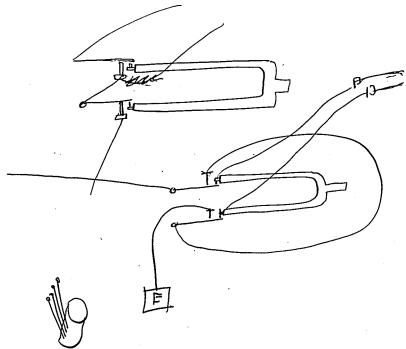


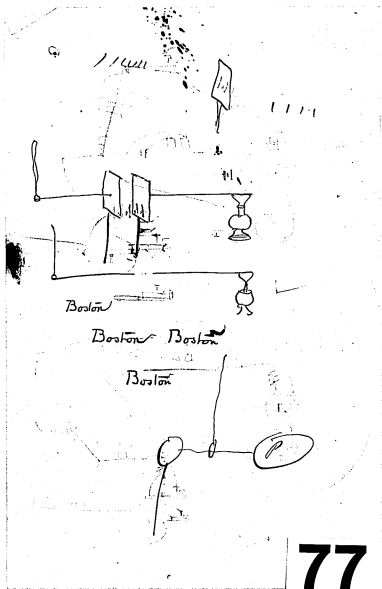
74

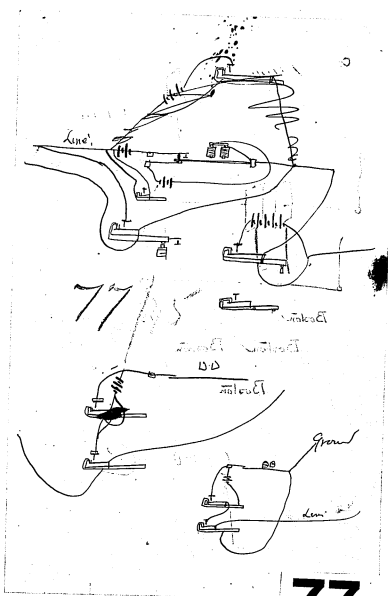
- 5 Induction Coils
- 6 Polarized Relays
- 3 Bells
- 1 Switches
- 48 Bind posts



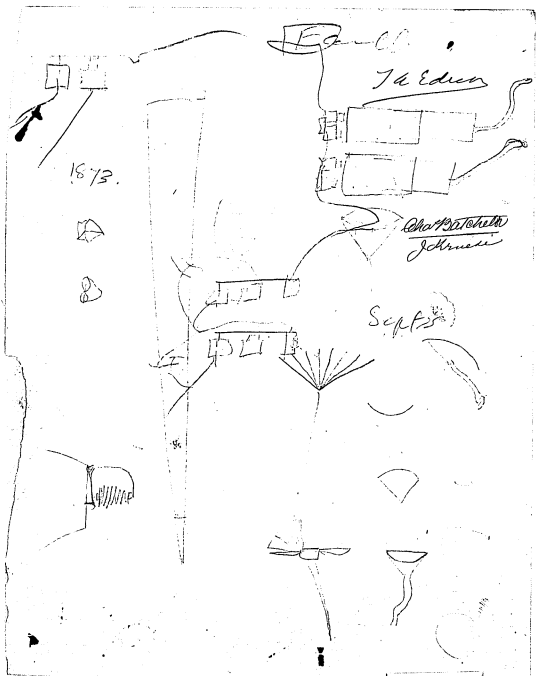
75







77

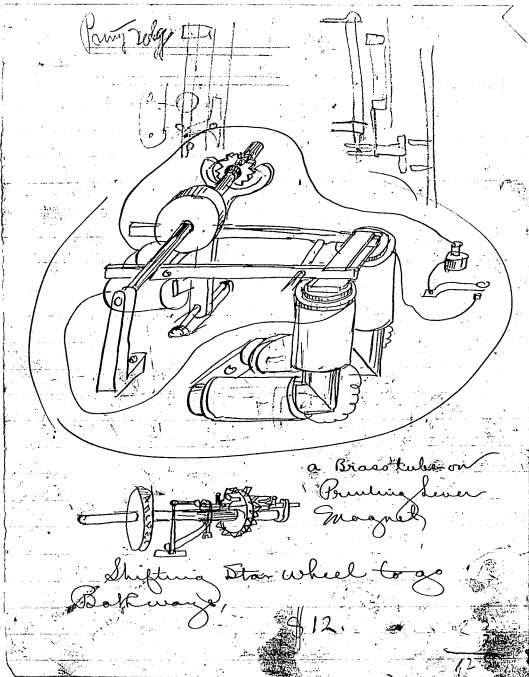


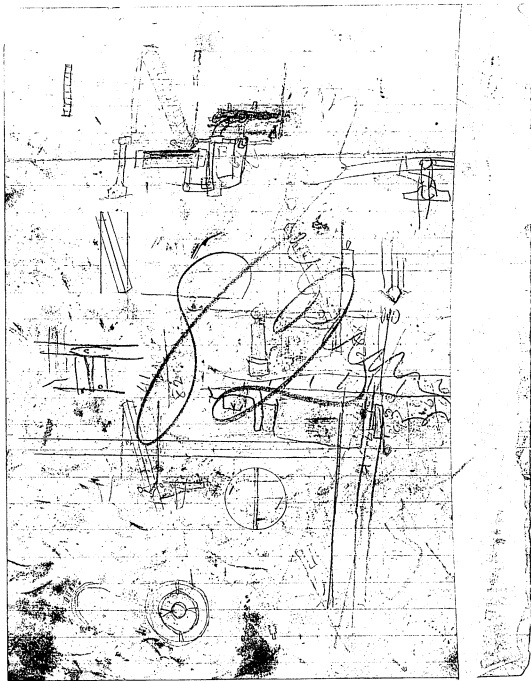
Adison

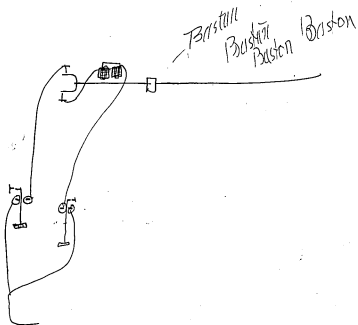
Chicago, Ill

Things assuming a more
satisfactory aspect think
we can Medcom things -

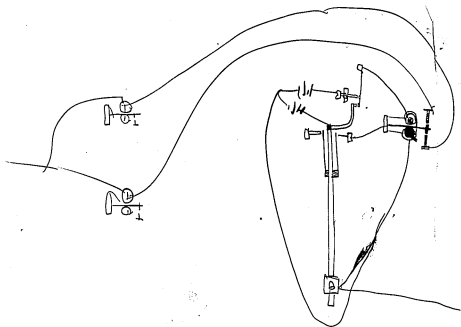
J. W. Fisher



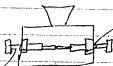




84



85



86

Automatic table sending & Receiving with 10 Rolls
Ferrisaymide Paper =

Roman Letter/Puncher up stairs =

Clean up Lamp/Engine make a new Battery &
Clean it nice & start it going =

Electromagnet set it up with
Key. Run wires to it from Battery so
you can put any number of cell on
Put in Rheostat 4. to form a line,
& shut it with a magnet =

Bring up 1 Large Acoustic Instrument,
fix it with 10 Cells Calland (10) run wires
to Battery want to show it off =

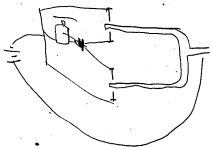
Get Electric Pen, Press, Battle Ink & paper
for showing it off =

Set up the old Embasser, with 5
Cells Carbon or Enqui, 3 on per magnet.
& a Bunnell sounder in repairing
font = Cut some paper blanks of my
paper for Embossing

6 of
~~at the~~ acoustic instruments,
I showed you last night =

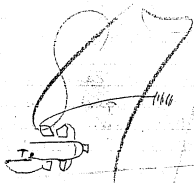
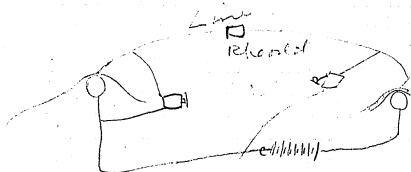
87

Carbon, battery, & the Electric
Jeweller Tools =

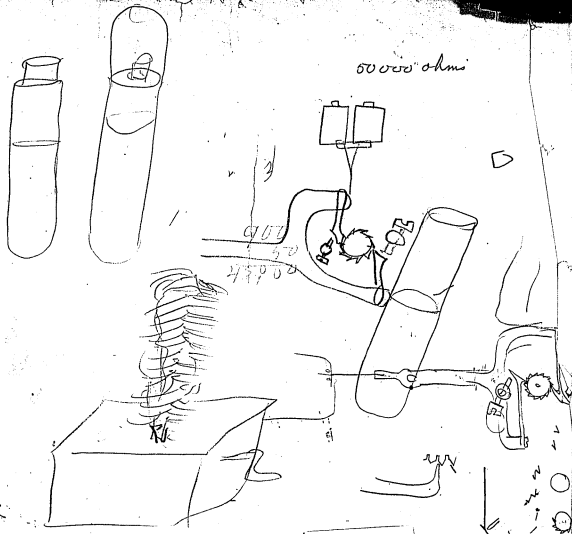


88

Amplitude



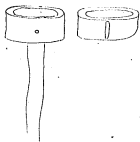
87



89

$\frac{90}{15}$ Oct-57 9 1840
 - Gen Rel Interference

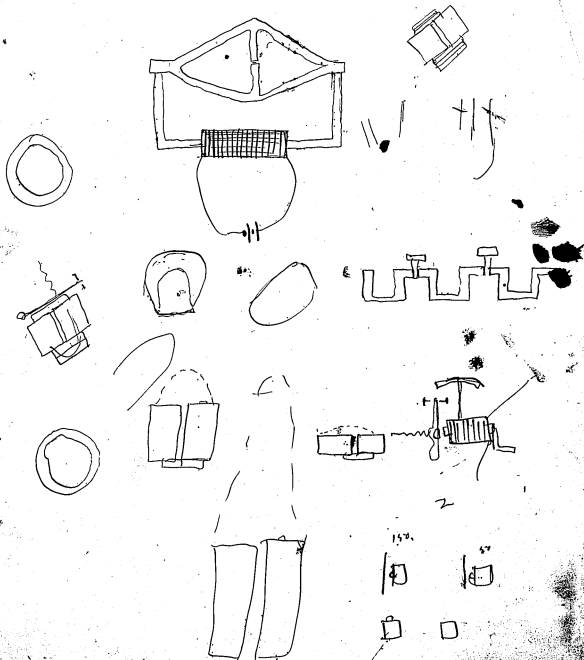
608



Sleeve for holding parts in work slot in to cross part to
cup.

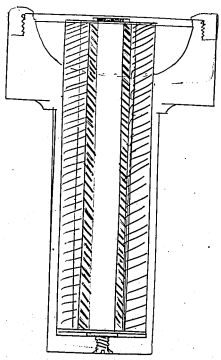
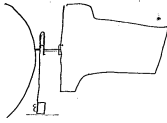
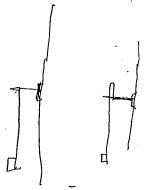
915

403



575

James Adams



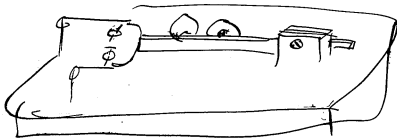
OFFICE OF
THE DOMESTIC TELEGRAPH CO.,
No. 12 VESEY STREET,

Gen'l T. T. ECKERT, Pres't.
J. C. REEVE, Vice-Pres't.
ALEXANDER MORTEN, Act'g Sec'y & Treas'r.

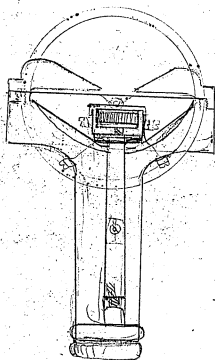
New York, _____ 187—

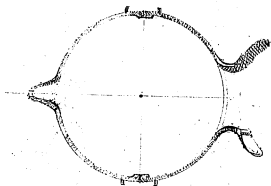
February 15

I want 3 old transmitting Reeds



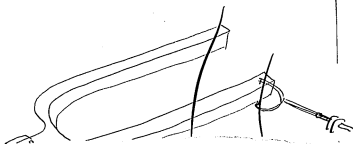
fixed up. also I want 3 of the
old Receivers. Reeds fixed to
go with them =





96

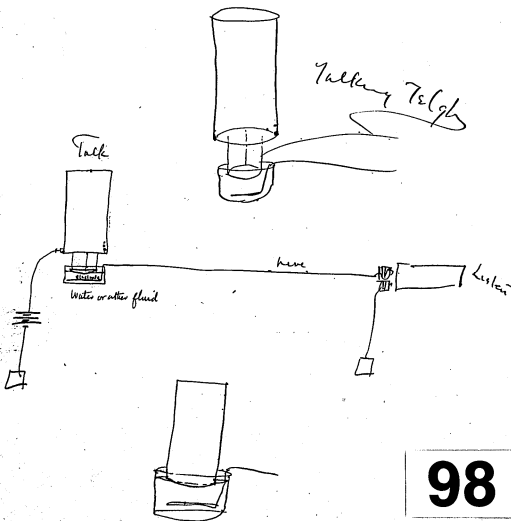
97



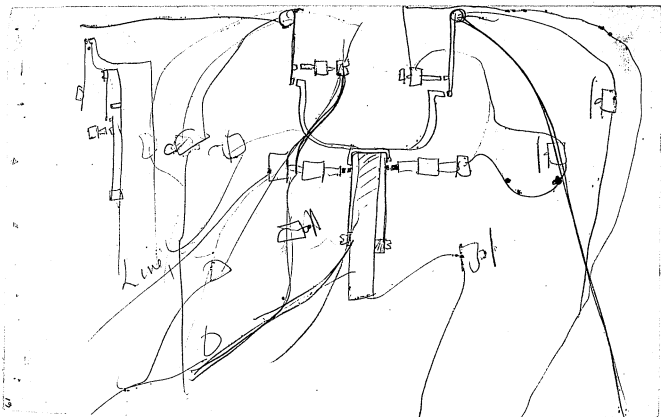
98

by placing the device direct upon
the fork or reed =

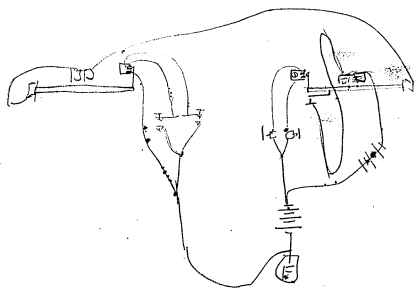
~~found~~



98



99



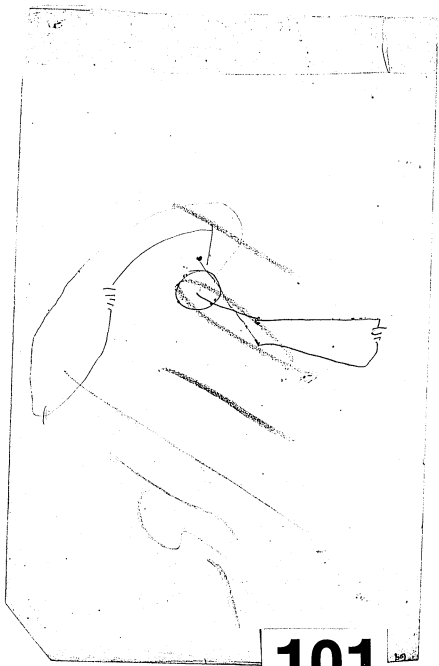
100

67

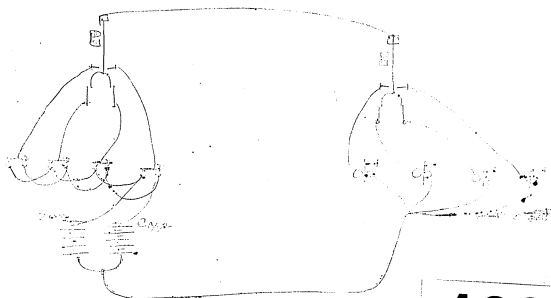
Acoustic



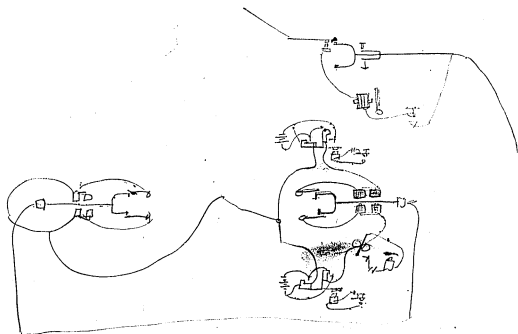
101



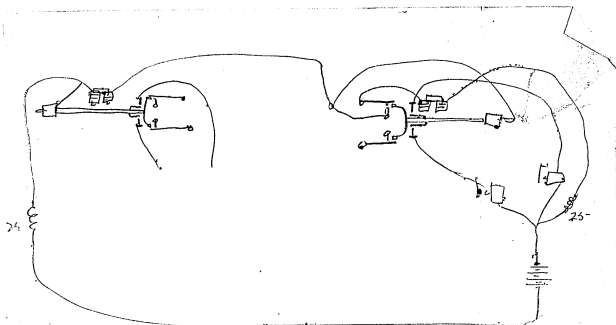
101



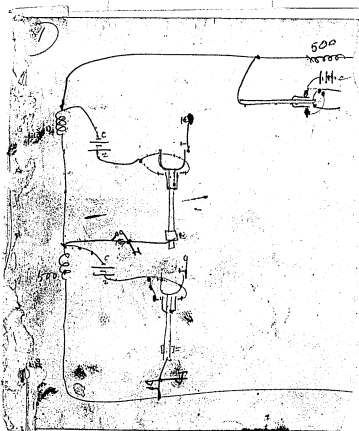
102



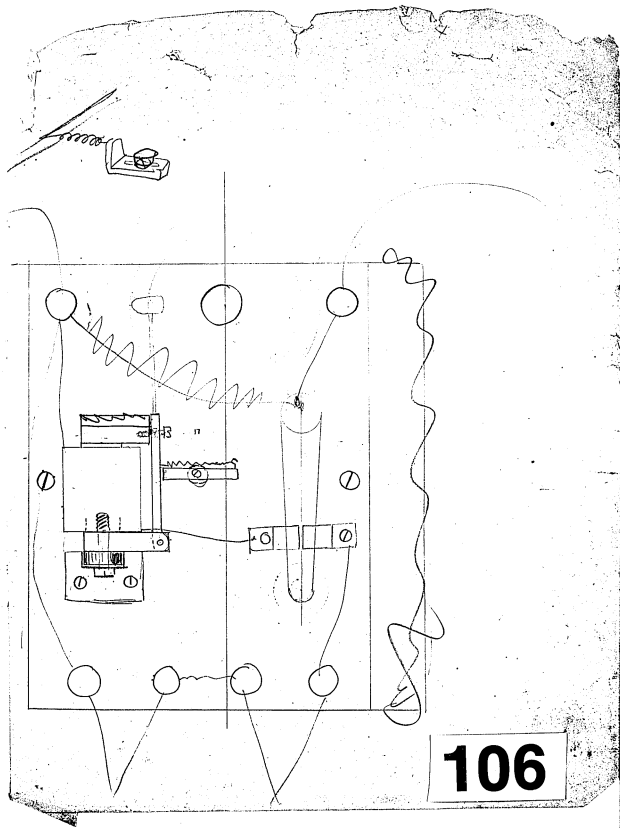
103



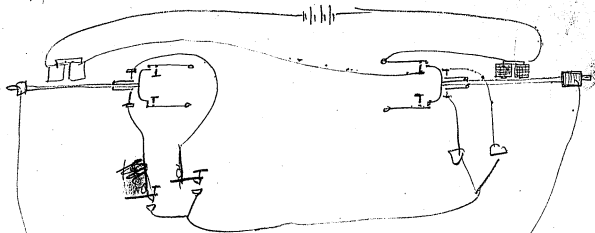
104



105



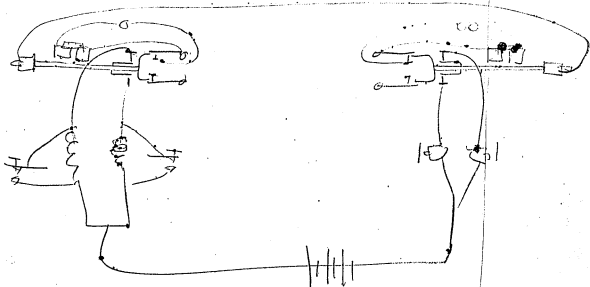
106



Works for ~~something~~ gully

Apparatus where by 1 wire with acoustic cables
 is made to thimble another wire on two sets of
 wots at once ~~at~~ mky 2 complete wires of a single

107



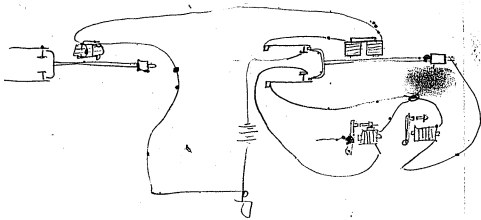
108

one = formation Get my + wash 1 unit
Can be the direct with acoustic Reeds
This need can ~~be~~ make Control so as
to double 10 or 15 ~~more~~ ~~units~~ ~~of~~ ~~both~~
through 9 with ~~very~~ plates
May 8th 13/16 - Ted, or

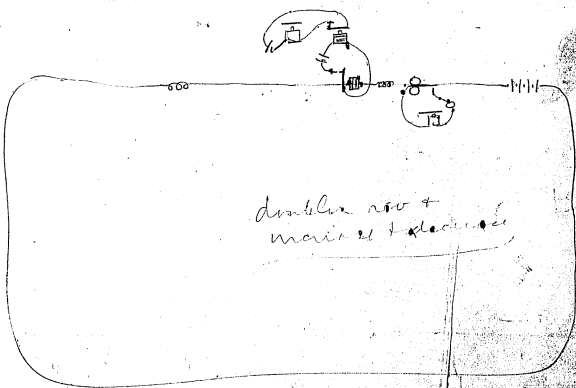
107

108/15

108



109



110

400

can't get him



Plug Head



Best design Hard Rubber

13th July
35. Aug
15. Sept

Solid Brass Plug With Hard Rubber End

63 71
3-00
68. 71

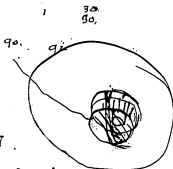
James Adams

14 71
2
10
20
30



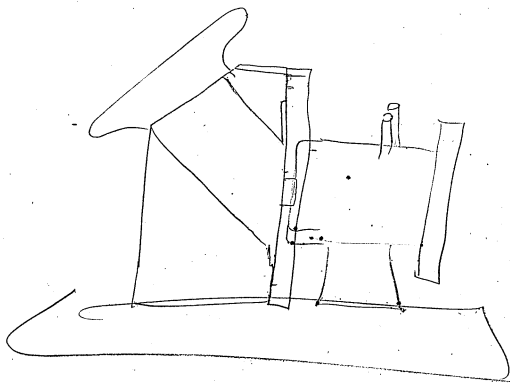
927

611



9300
6871
6427
9300

2729



113

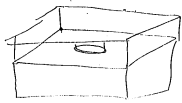
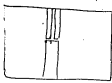
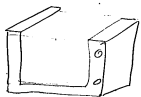
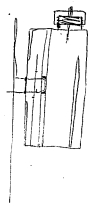
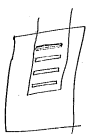
13 is loud ~~enough~~ may be used perhaps
for sending on Easy

Make them this a hand to porter of Ball's sleeping
car conductor or brakeman to pass it out but
hand to some agent employee of train
in any case mark package thus

* E. H. Johnson Barnums Hotel Baltimore
Care Porter of Baltimore Sleeper

Upon delivery of this package
Clerk of Hotel will pay 2 dollars
Important now

James Adams



Boston

Boston

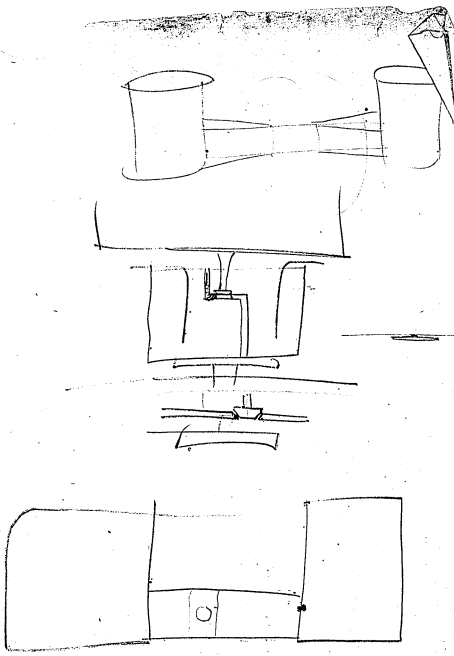


Telephone
Telephone

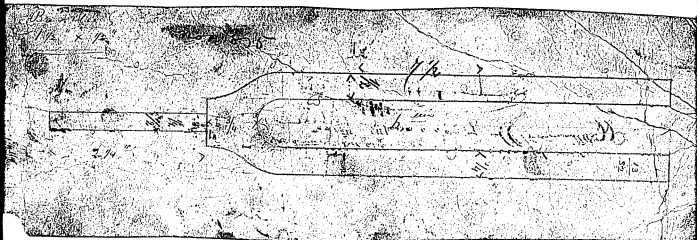
Speaking Telephone

Telephone
Telephone Telephone

30

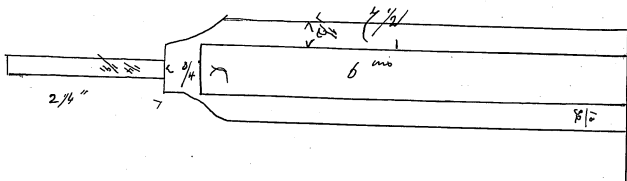


116



[TRACING]

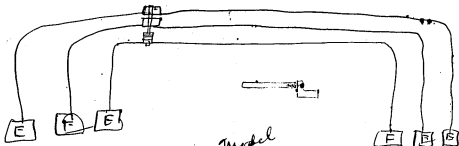
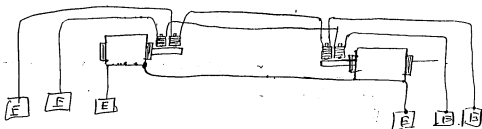
Bar of steel
1 1/2" x 1/2"



119

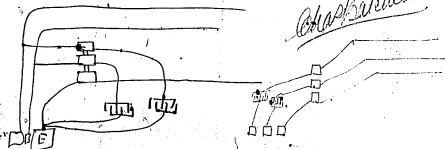
13 G plates
4 Condenser coils

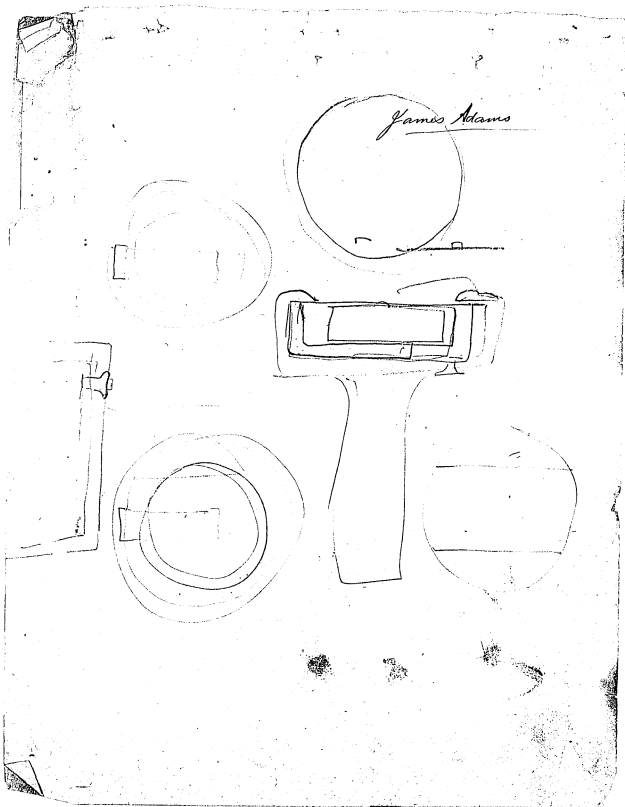
James Adams



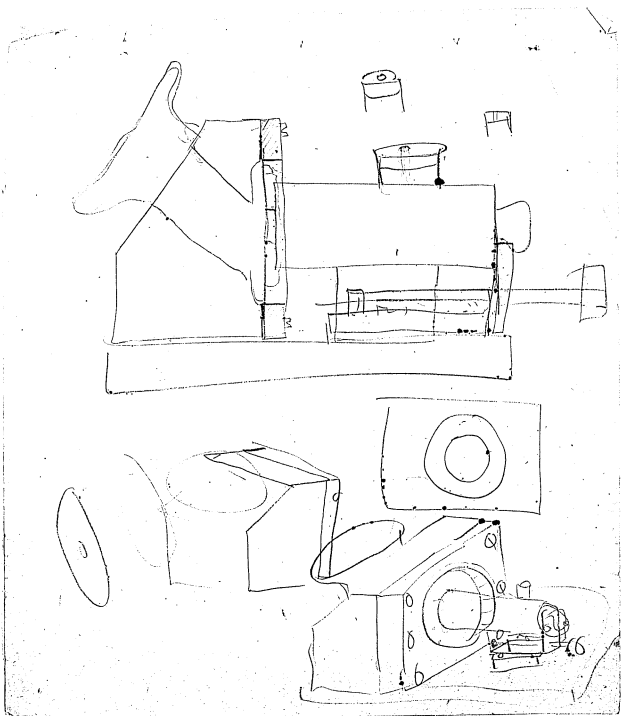
Model
Compensation
Dec 9 1977
Tadlin

Chas. Satchell

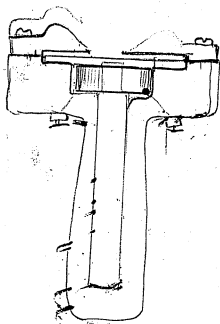




121

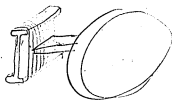


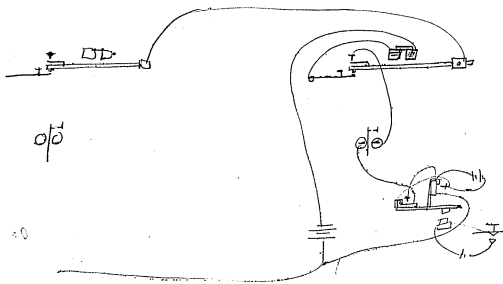
122



123

124

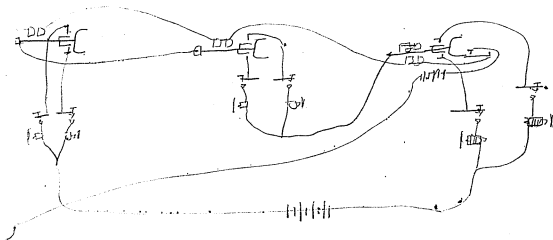




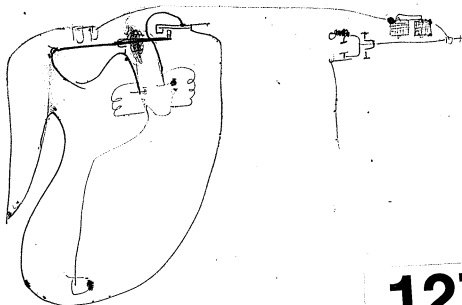
o/p

125

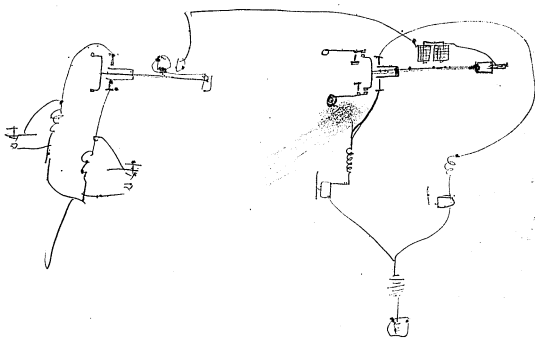
Same with another variation



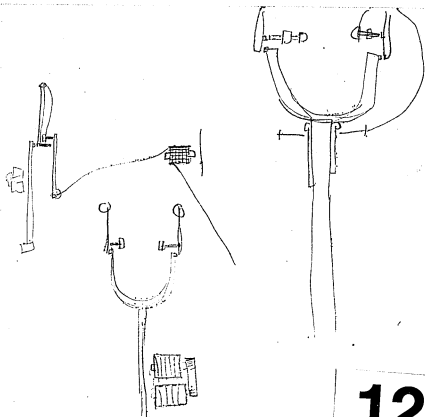
126



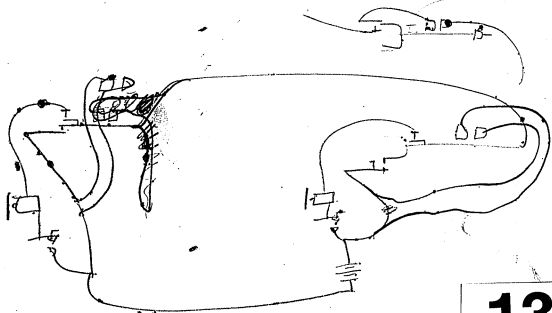
127



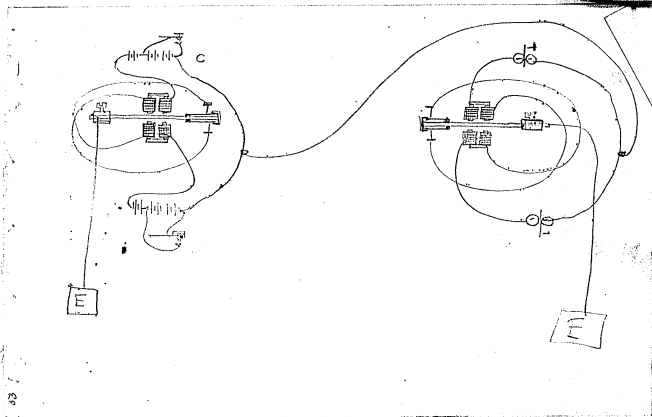
128



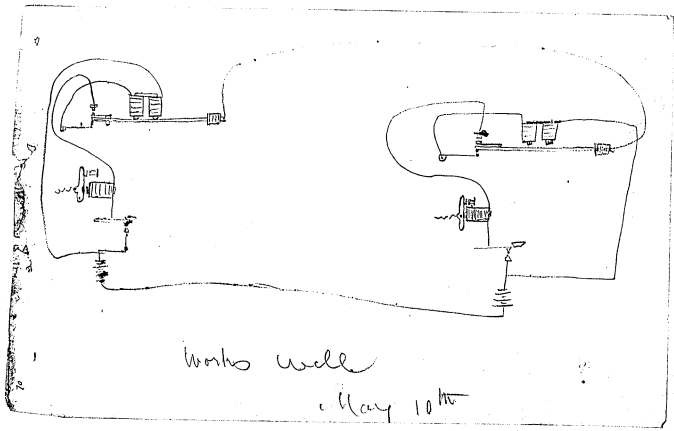
129



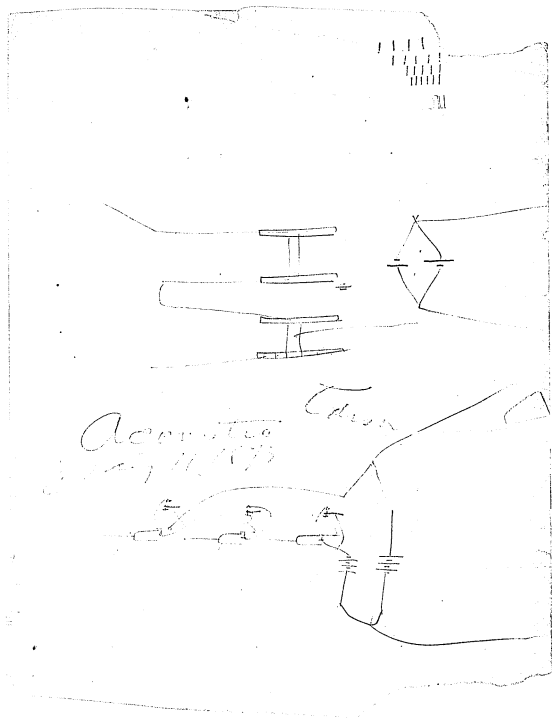
130



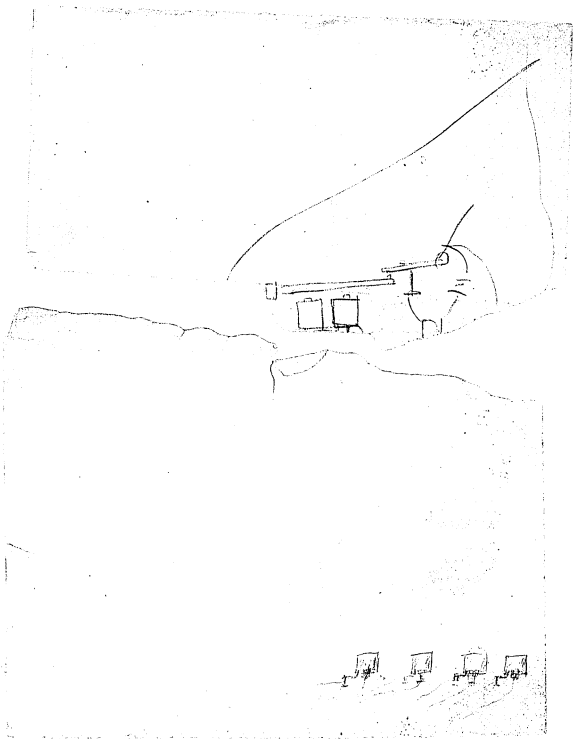
131



132



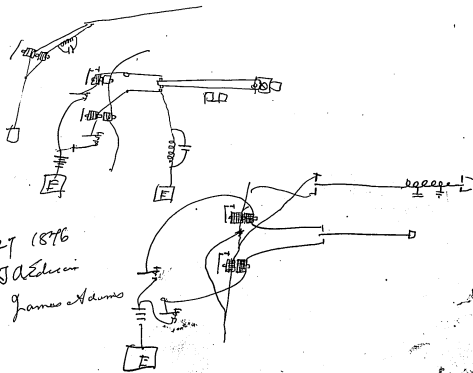
133

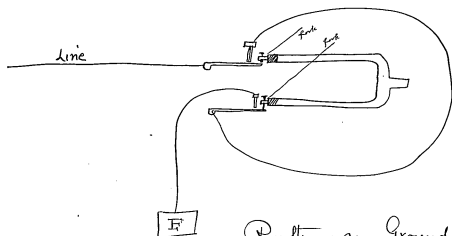


134

found that I was no go.

With keys open any particular one would work ok but when you closed say 3 & worked 2 & adjusted right 2 would work ok but when 3 was opened & turned change adjustment of 2 materially -



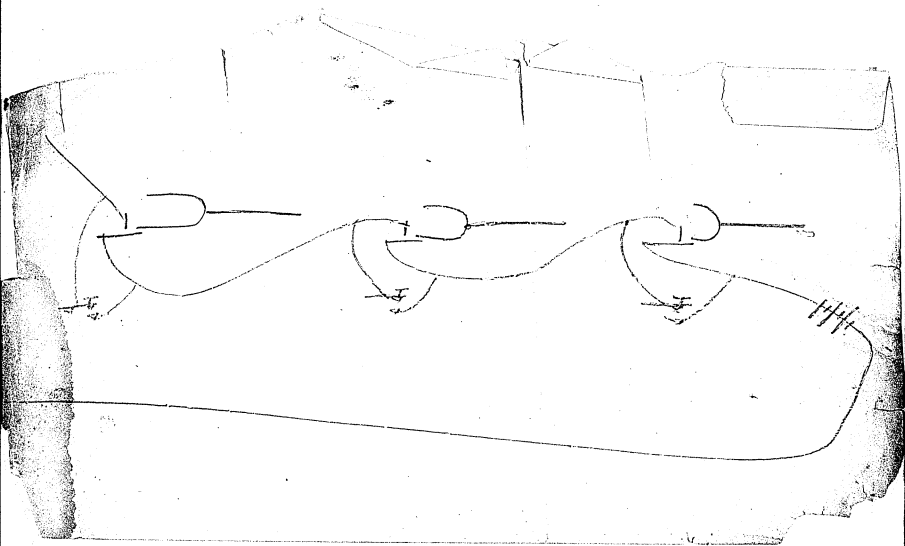


Putting an Ground on
Multiple fork,

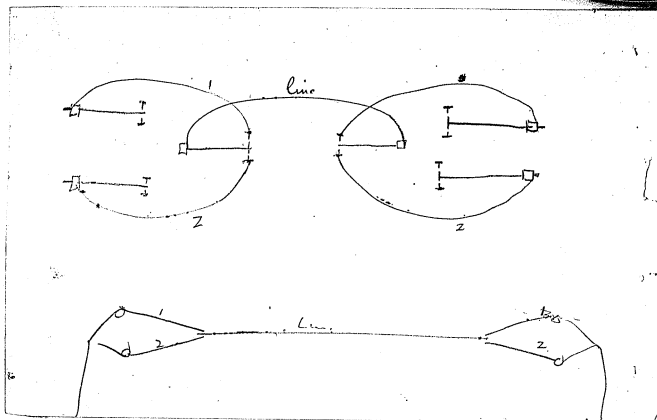
This ground can be put on at the various
way station along the line =

July 28 1896

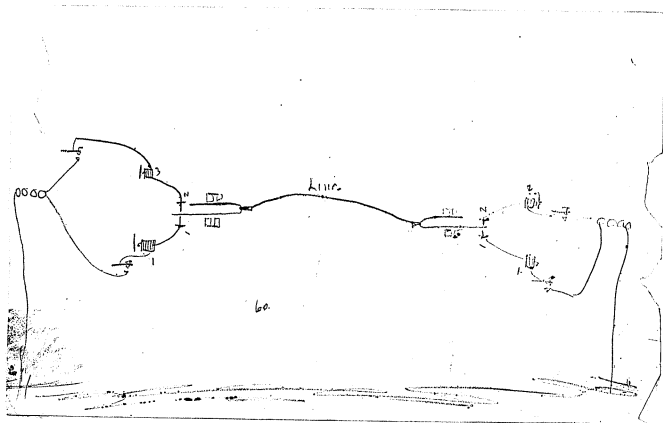
J. A. C. Quon



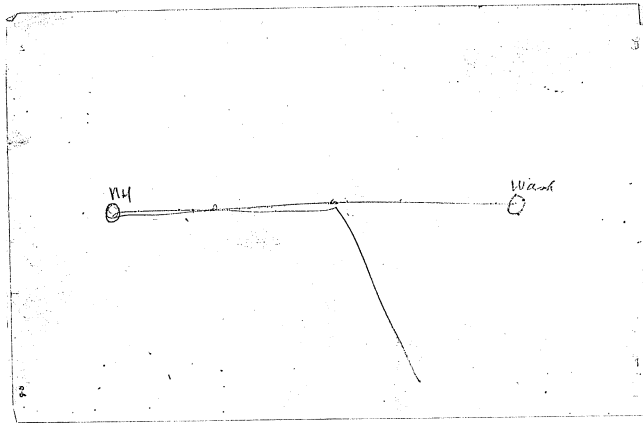
137



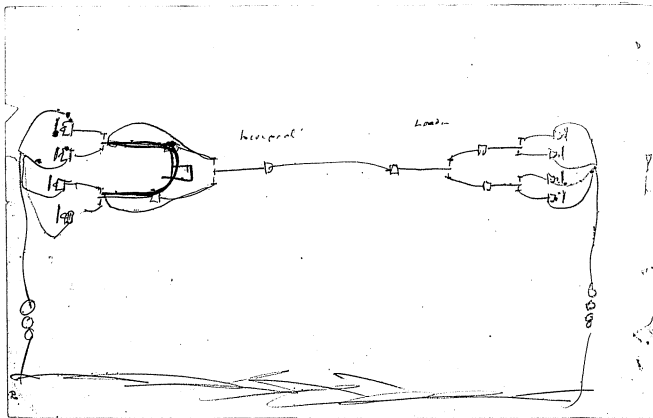
138



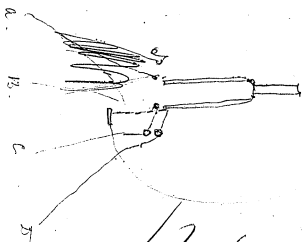
139



140



141

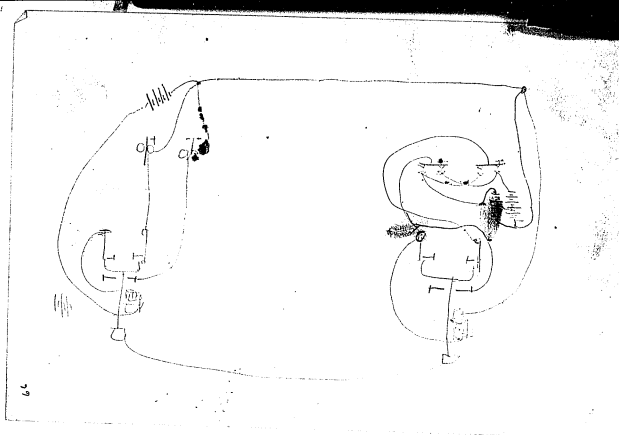


1240

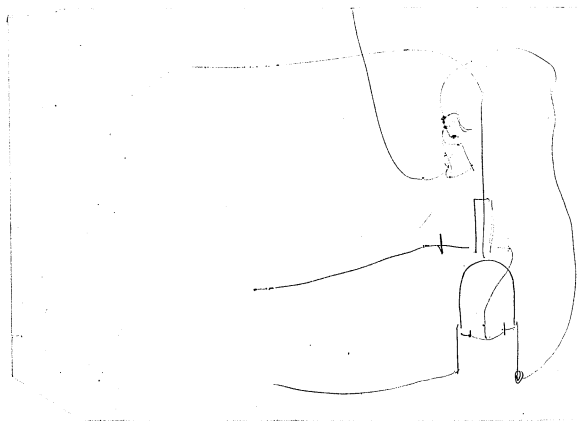
140

141

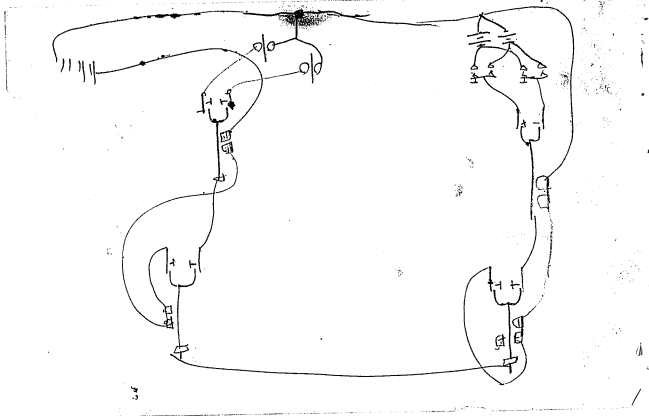
141



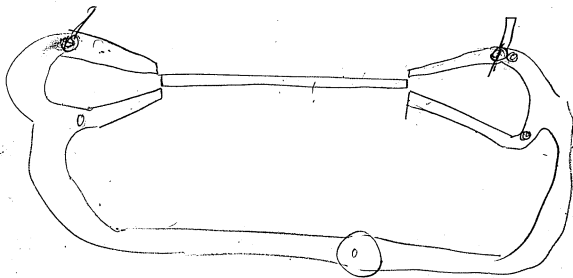
142



143



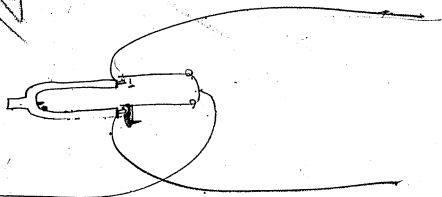
144



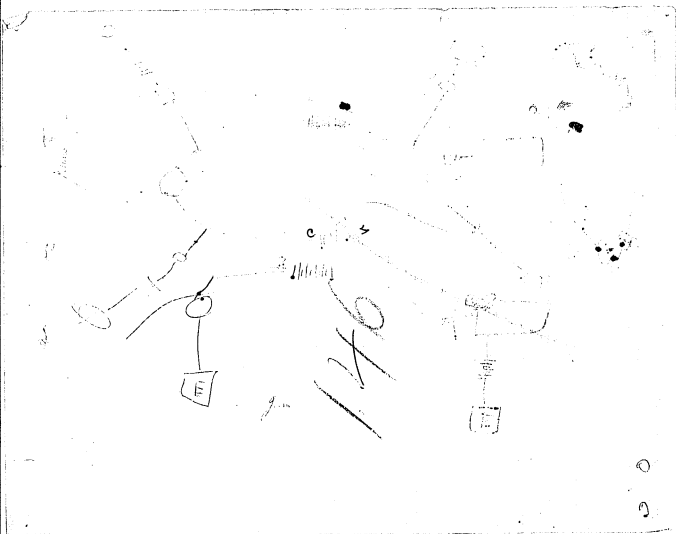
145

12/27

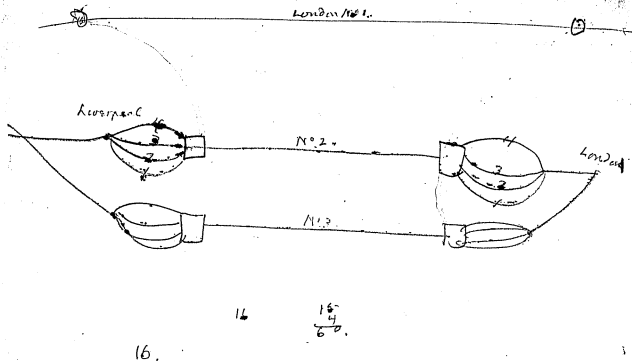
144



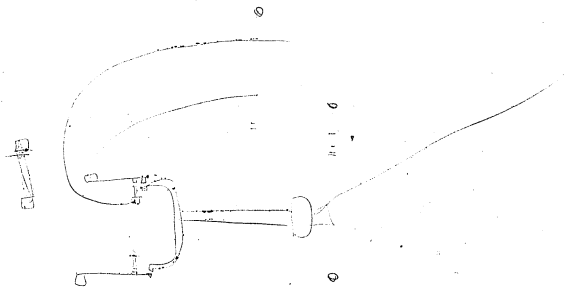
145



146



147



148

547

6 Speaker

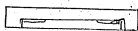
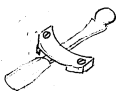
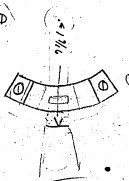
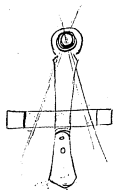
- 1 turn inside mouthpiece first
- 2 Cut thread on shank
- 3 Face up body, cut thread, screw in shank, and turn off shank, and bore and ream it
- 4 Chuck shank, turn face & ream, cut thread, put on mouthpiece turn it up and finish head
- 5 put body on mandrel of final body

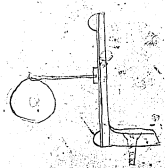
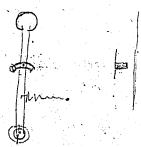
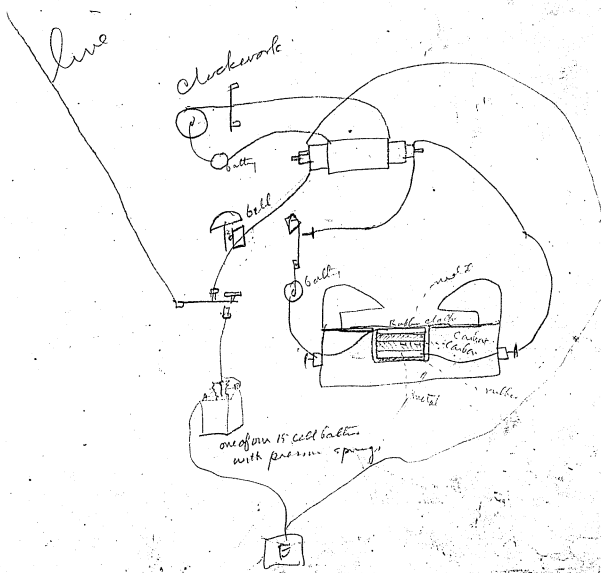


Speaking Telephone

Number	Diaphragm or Accessory	Thermostatic	Control	Notes
1	Large Diaphragm		Z	our own
2				
3	Large tin Diaphragm		Z	our own
4	"		Z	our own
5	"		Z	our own
6	"		Z	our own
7	"		Z	our own
8	"		Z	our own
9	"		Z	our own
10	"		Z	our own
11	"		Z	our own
12	"		Z	our own
13	"		Z	our own
14	"		Z	our own
15	"		Z	our own
16	"		Z	our own
17	1/32 Iron Diaphragm		C	our own compound
18	tin large		Z	"
19	"		C	"
20	"		Z	"
21	"		C	" compound

Char. Batache
 Johnson
 W. Edman





15

3/10
1/1/20

- 1) Formula for calculating a fork to give any required number of vibrations per second.

$$V_s = \frac{K e^3}{(l + y)^3}$$

V_s = Vibrations.

K = 818270 (Constant for steel).

e = Thickness of Prong.

l = Length to bottom of curve.

y = 4 mm. Constant for base.

All measurements in millimetres -
to convert into inches into millimetres
multiply by 25.4 (near enough)

Example. Given fork .5" long. x $\frac{3}{8}$ " thick.

To find the vibrations.

$\frac{3}{8}$ " into mm.

$$\begin{array}{r} 25.4 \\ \times 3 \\ \hline 876.2 \\ \hline 9.525 \end{array}$$

$$\begin{array}{r} 818270 \\ \times 9.525 \\ \hline 4091350 \\ 1636540 \\ 4091350 \\ \hline 77940275.0 \end{array}$$

$$\begin{array}{r} 818270 \\ \times 9 \\ \hline 7364430 \end{array}$$

$$\begin{array}{r}
 25.4 \\
 \hline
 152.4 + 4 \\
 \hline
 158.4
 \end{array}$$

158.4 ~~4~~ ignore out decimal.

$$\begin{array}{r}
 158 \overline{) 7794.00175} \\
 \underline{236} \\
 402
 \end{array}$$

(500)

$$\begin{array}{r}
 158 \\
 \hline
 158 \\
 \hline
 936 \\
 780 \\
 \hline
 158 \\
 \hline
 24336
 \end{array}$$

$$\begin{array}{r}
 24,336 \overline{) 7794.00175} \cdot 75 \quad 320.2 \\
 \underline{3008} \\
 49322 \\
 \underline{48672} \\
 65017 \\
 \underline{72}
 \end{array}$$

Ans: 320.2 vibrations.

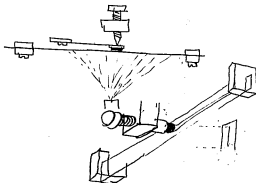
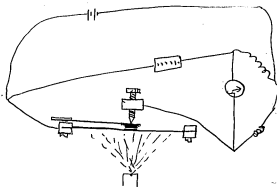


Springs on Beckman
so that the vibration
of detector can not be
detected



155

Telegraph



156

M. J. ...

157



Telephone

HO

100
200

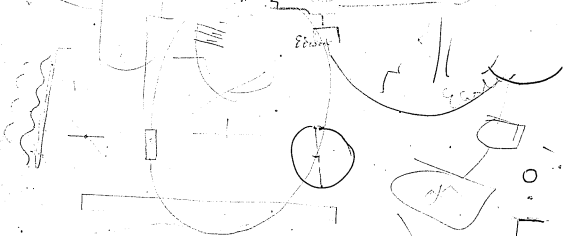


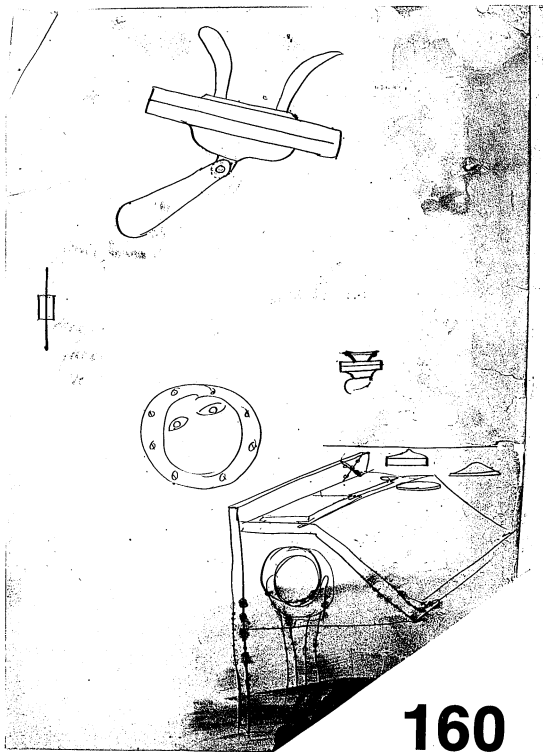
variable frequency + 1000

1000

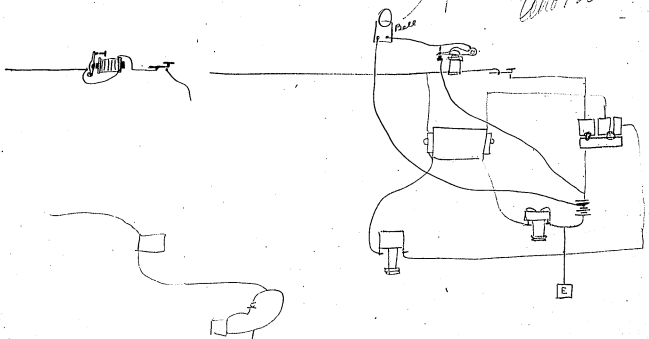
variable
frequency

1000

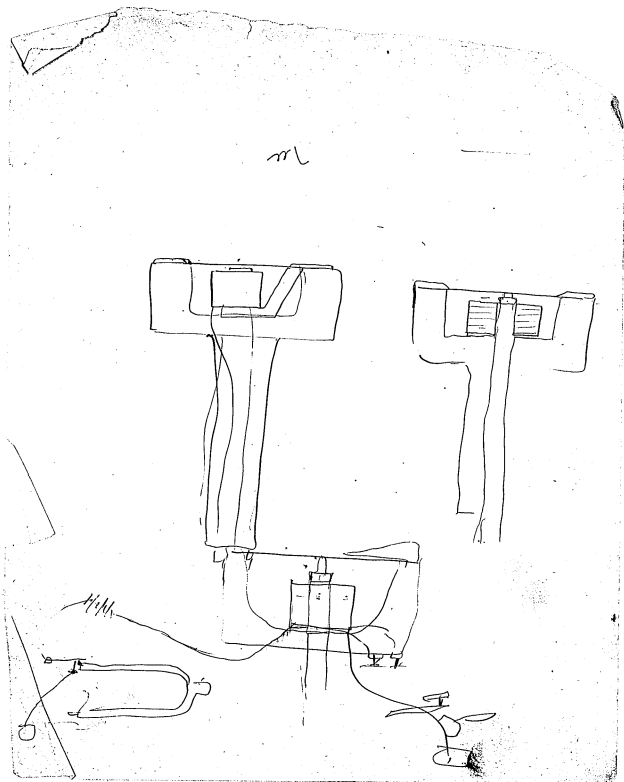




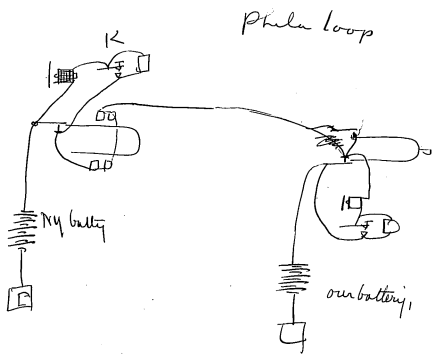
Speaking telegraph
Ahoi ~~St. Charles~~



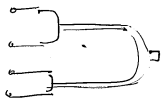
ml



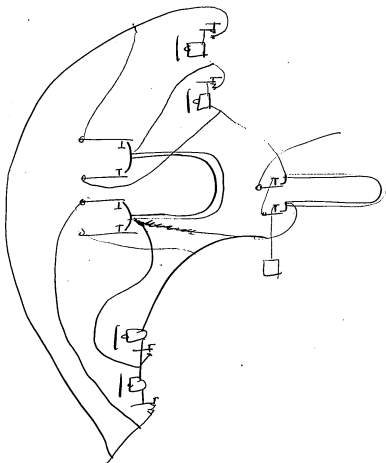
162



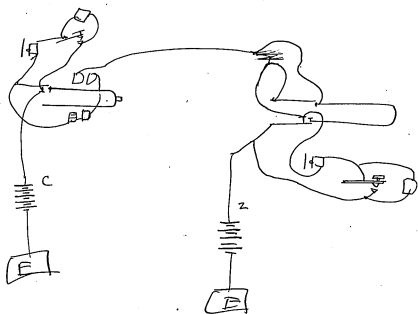
This works fairly but I am afraid that the fakes will work independent of resistance in a great measure as I notice that the one in the main line increases its amplitude greatly when Key K ^{is open} & Rheostat has large Resistance =



164

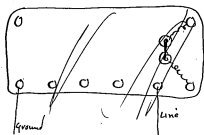


165



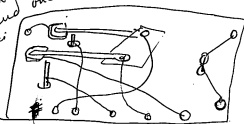
Plan 1 for working controlling
wire straight marse

Duplex itself works well with the vibrator going. but the receiving vibrator does not work strong enough with the 60 cells. Calland we have on circuit. the loop to Phila return is used transmitting with my battery

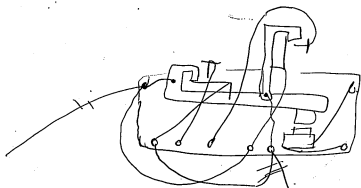
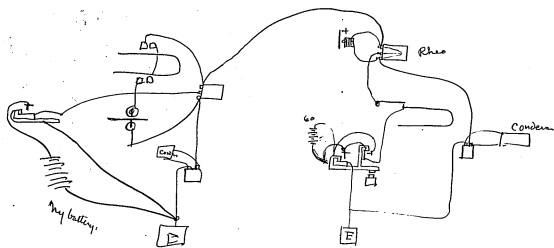


above end & our 60 cells at the other I think that the addition of 100 cells will make it work perfectly satisfactory we are now going to add 25 cells;

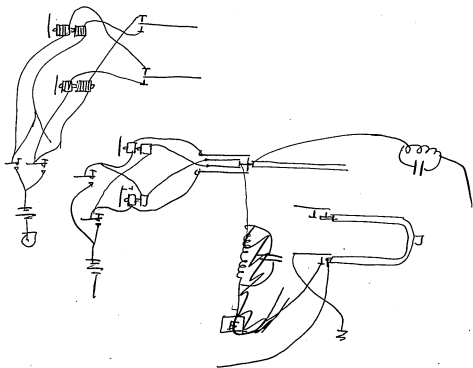
Works OK with 90 cells Calland one end.
 to 90 cells that work
 fine = have but handle other end ends
 across at the end which is - main



We tried it on direct loop with my battery at each end consisting of 100 & 90. Calland & the strength of vibration was $\frac{1}{3}$ more than we should even want ^{that is $\frac{1}{2}$}

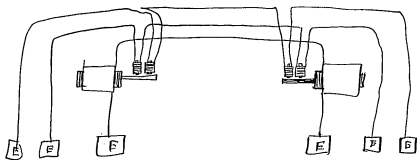


We now duplicate the controlling circuit as above shown and find that



170

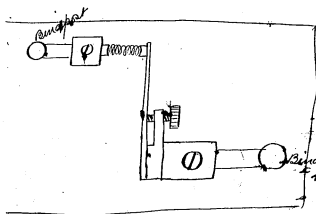
JA Edison
Wasspatecher



Telegraph
Compenation

Krusu

Make instead of this instrument another like this :-



Make one part stationary with the spindle cupped a little put the other spindle on an adjustable spring also cupping

Batchelor

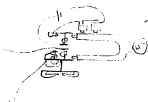
M M Fone
J. K. K.

W. L. L.



T. A. EDISON.

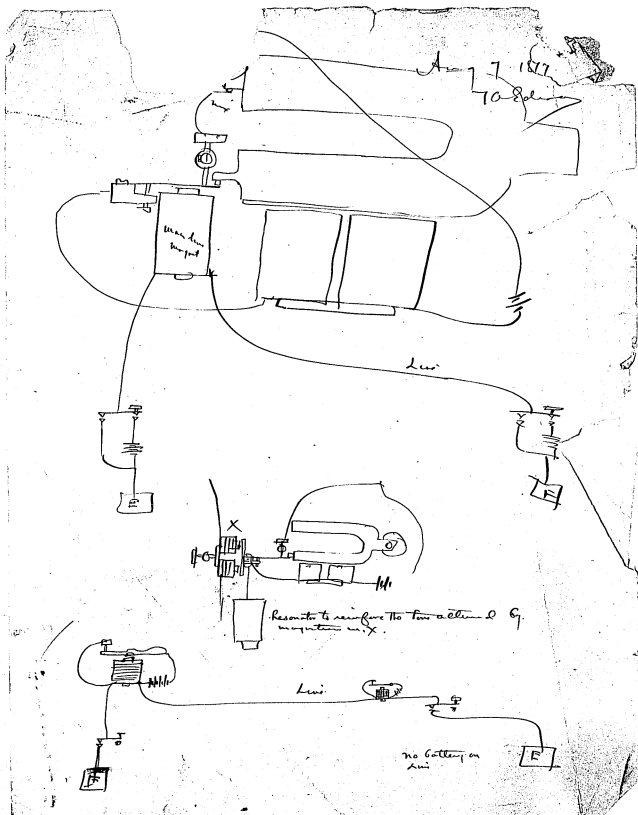
Menlo Park, N. J., 187



Nov 5 1877

T. A. Edison

173

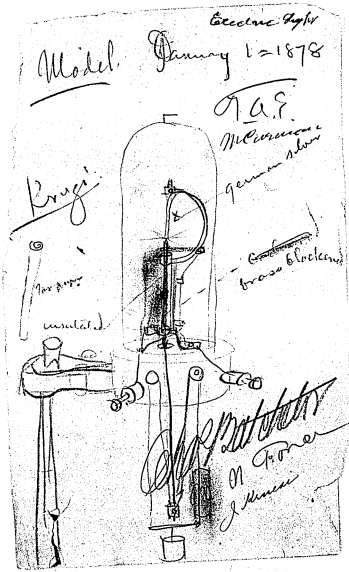


Notebook, Volume 16

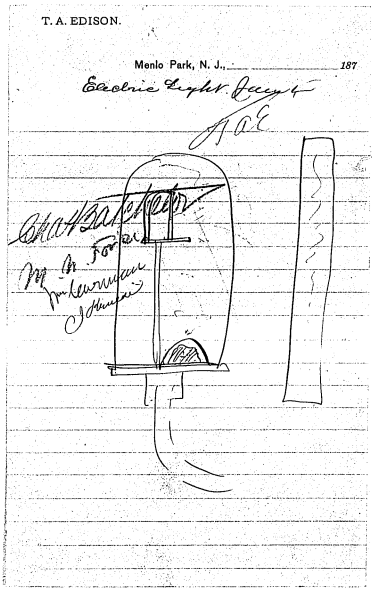
This volume covers the period January 1878-December 1879. Most of the notes and drawings are by Edison, Charles Batchelor, and John Kruesi; a few are by John Ott and John K. Knight. Many have been witnessed by members of the laboratory staff and notarized by Stockton L. Griffin. All of the material relates to electric lighting except for a telephone drawing on page 376. Much of the electric light material for September and October 1878 has been copied into Experimental Researches, Vol. 1. The volume consists of 437 numbered, unbound leaves.

Pages found in Laboratory Scrapbook, Cat. 1146 (Miscellaneous Shop and Laboratory Notebooks): 76, 160, 308, 387, 399.

Missing pages: 80, 142, 171, 306, 313, 369, 388.



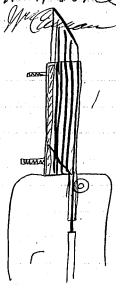
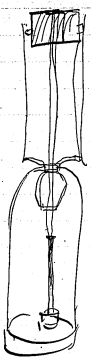
1



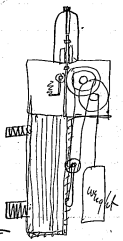
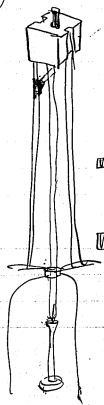
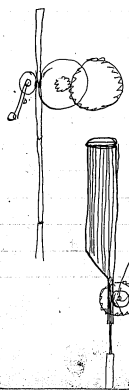
2

Electric Light
Jan 13, 1878

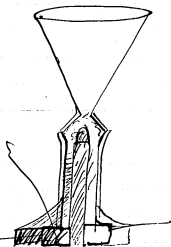
Motor
in force
W. E. Sawyer



W. E. Sawyer

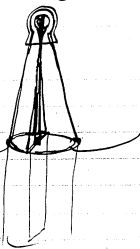
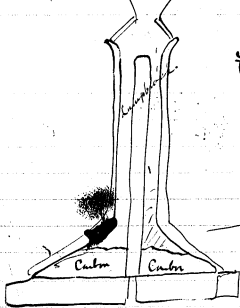


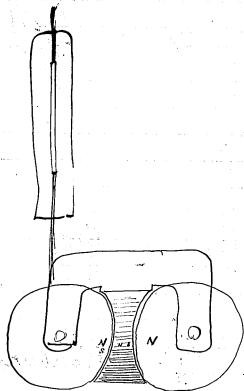
Jan 31 1878
JAE

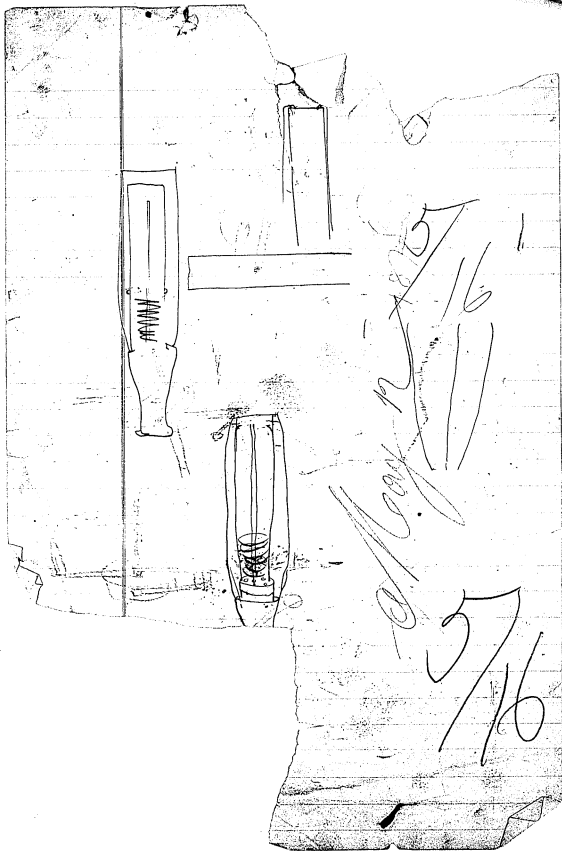


4/16

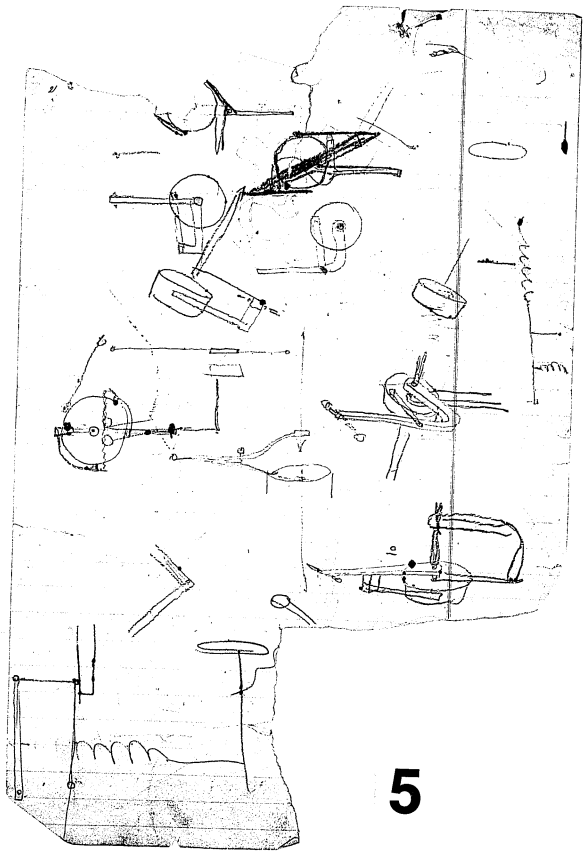
Carburizer of Silicon
for Incandiscent







5



5

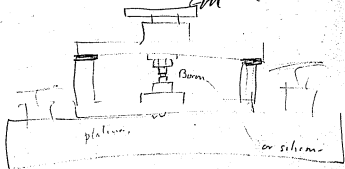
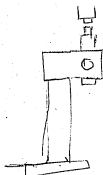
Electric Light

Sheldon

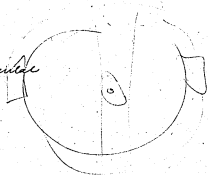
August 27, 1878

J. Kruesi
J. A. Edison
Chas. Batchelor
M. N. Preece

5

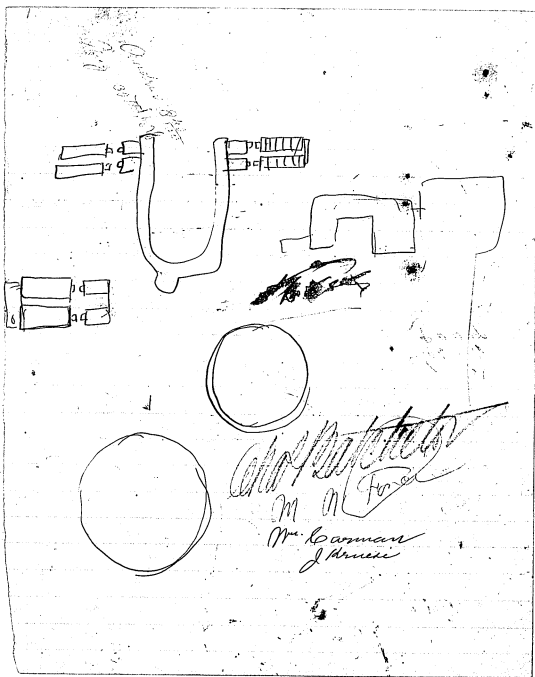


Copies of this drawn in Experimental
Researches Vol 1 Page 117 on
the 25th day of Sept 1878
Wm. Barnum

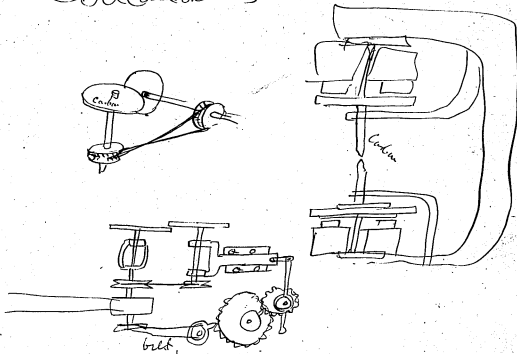


5

6



Sept 8 1878
Carbon Electric Lamp
J. A. Edison



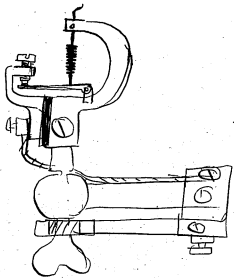
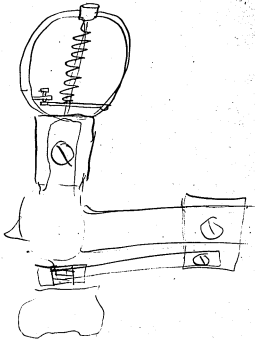
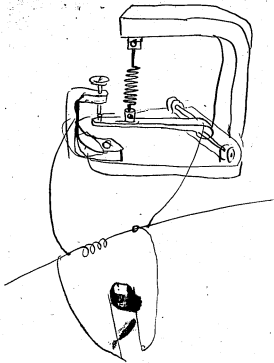
91

91

Sept 9 1878

J. A. Dixon
Scherk detector
Amusee

Electric Light
Glasman
M. N. Force



Colindon page 129 Vol 1. E. H. Lane
Oct 7. 1878 - Wm. Lammie

(Copied into book No 1 page 112 Sept 29. 1878
W. Barrow)

Electric Light

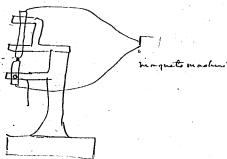
Sept 9 1877

Ja Edison

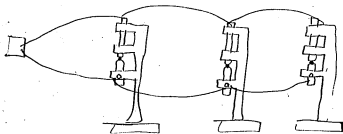
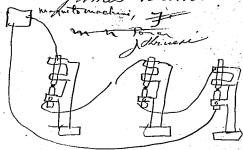
Edison
James Adams

Watts machine, &

Watts machine



Edison
Barrow



The Employment of Silicon or Barrow (Melale) seems to ensure the continuity by their conductivity and still have resistance enough to allow the arc to form - Good in the period of Silicon - Keep the Carbon points at a proper distance by a pressure between them

9

1

2

T. A. EDISON.

Electric Light

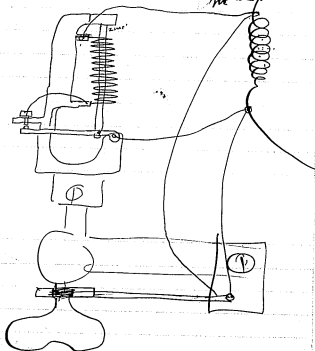
Menlo Park, N. J.,

1878



Ap 110th 8
- B. A. Batchelor

no m. force



Copy of this drawn in Exp Research Vol. 1.

Page 118 am Supp 24. 1878

Strooker L. 9-11

16 Caman

10

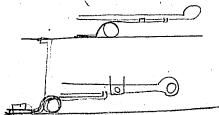
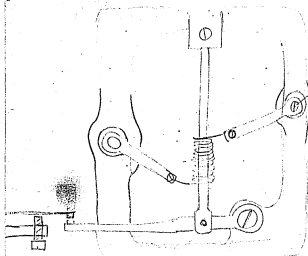
Electric Light Subdivisor

Sept 11 1874

General Office
Chas. Patchell

J. H. ...
Thos. Logan

J. Alderson
M. M. ...



Copy of this on page 170. Vol. 1 of
Eng. & Reconstruct. this being of Pat. 1874
Wm. Cannon

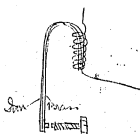
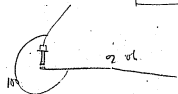
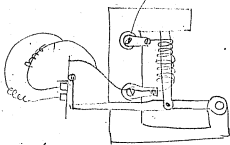
11

Electric Light
Subdivision

Sept 11 1848

Stockton & Co
Chas Batchelor

Thomas
7 Aches
is prevent flickering
put in resistance so
by little wheel on
end of lever



Thin strips of Brass and iron
together & bent up in a U shape
these are very sensitive &

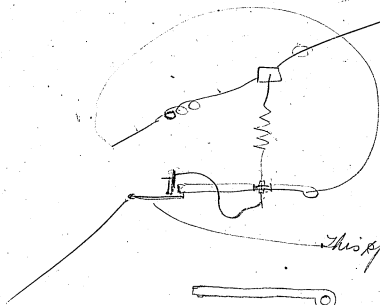
Copy of this drawn on page 120. vol 1 East River also
the 30th day of Oct 1848 Wm. Larnan

Electric Light
Subdivision

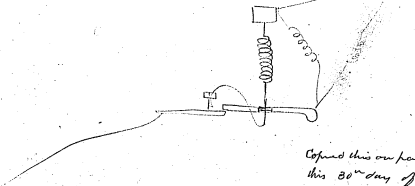
Sept 12th 1878

Stockton Schiffer
Chas. Satchel

J. H. H. H.
J. A. Edison
M. M. Faray



This spring very light & long.



Copied this on page 122. Vol. 1. Ex. Research
this 30th day of September, 1878
Am. Lamm.

13

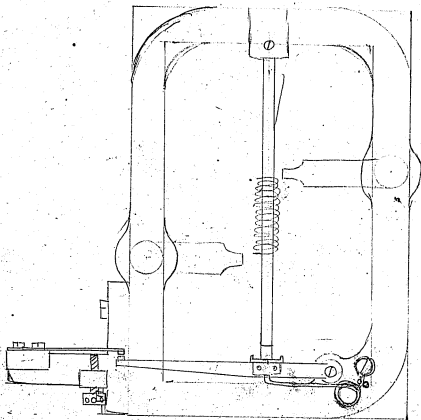
10
Electric Light
Subdivision

Sept 17th 1875
Construction of
Chart Satchel

J. Lincoln

Thos. Poyam

T. A. Edison
M. M. Fox

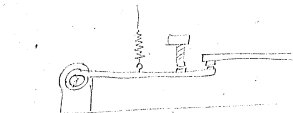


comes this on page 121. Vol. 1. E. H. Knack
the society of 2-18-75

Wm. Lawrence

13
Electric Light
Subdivision

Sept 14th 1876
J. Johnson
Chas. S. Sibley
M. N. Fane
J. Johnson



Collected this on page 123. Vol 1. Early Records
this 30 Aug. Sept 1876
M. N. Fane

14

14

magnetos

Walter L. Huffman

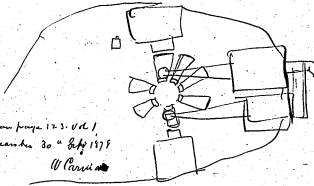
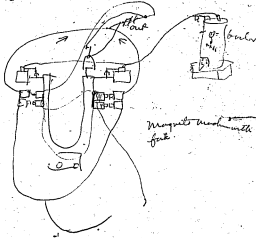
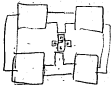
Sept 14 1878

To Edwin

W. Huffman

In care of J. P. Jones

J. Huffman



copied from page 123 of Vol. 1
of Edw. Huffman 30" Sept 1878

W. Huffman

16

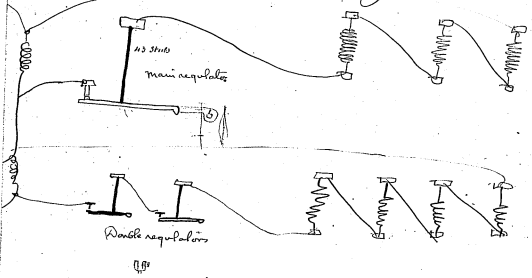
5

Ceetue light
Sept 14 1878

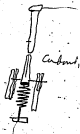
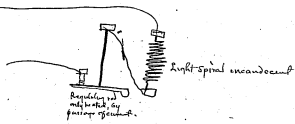
Streeton & Triffin

J. A. Edison
Edw. B. Steetor
M. M. Foster

J. H. Kresel



11.11



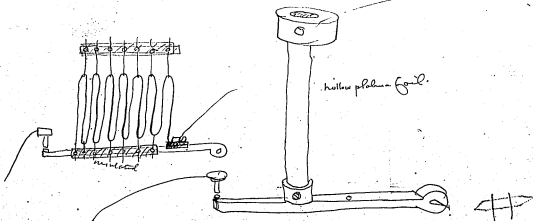
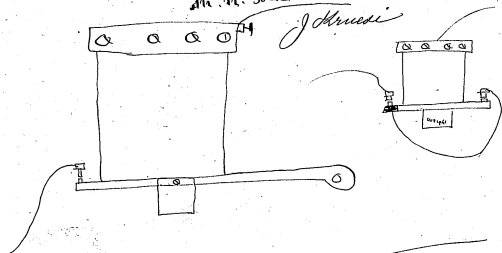
Copies this on page 124 of Edison's Note 1
the 80th day after 1878

16

Electric Light.

Sept 14 1878 J. A. Green
Charleston S.C.
Dr. W. J. Force.

16
Hutton & Proffers



Copied on page 125 of Research Vol 1
The 28th Sept 1878 W. Cameron

Electric Light Subdivision

17

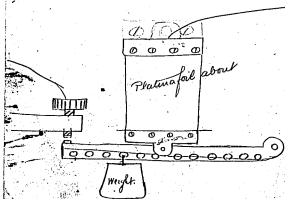
Sept 15 1878

Structural Engineer
Charlaton

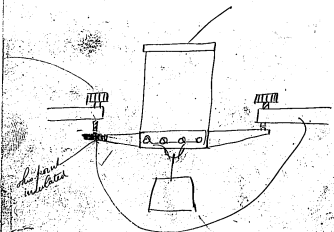
John
J A Edison
In force

These

make "light" instrument like this:



and another with double points



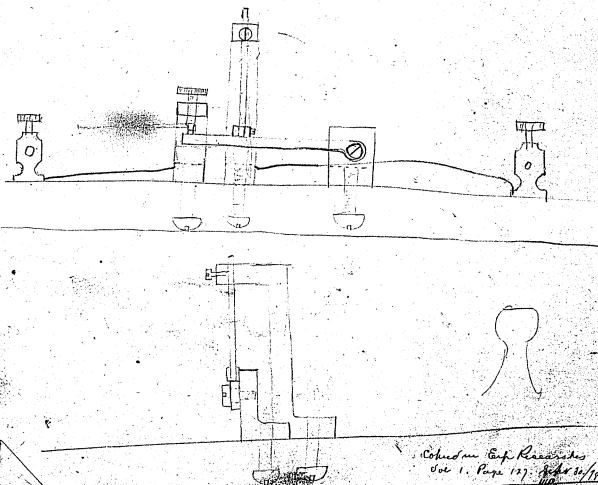
Copies in East Researcher Vol 1. P. 120
this 30 day Sept. 1878

J A Edison

Electric Light - Sept 16th. 1858

18

of Patent Office
Johns
J. A. Edwards
Charles F. Johnson
M. N. Force
Johnson



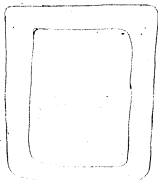
Johnson & Co. Patented
Oct 1. Page 127. No. 24/10

2)

Gasoline Light

21

pl 14 48
The Edison
Sharkskin
M in Force
Johnnie



Copies on page 30 Vol 1
Exp Research Oct 1, 1971
to Currier

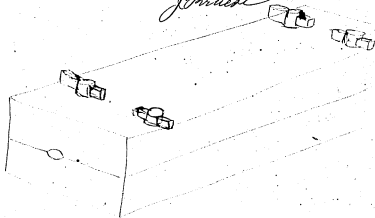
Electric Light
20 Subdivision

Sept 14th 1848 20
J. W. Aldrich

Char. Batcher
M. M. Jones

Would for experiments for increasing the heat in air
in a glass tube

J. H. Russell



Copied this on page 129, Vol 1
Exp. Researches, first day of Oct 1878

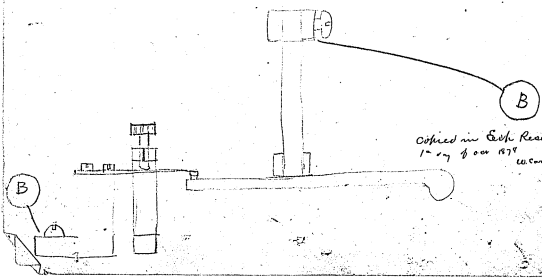
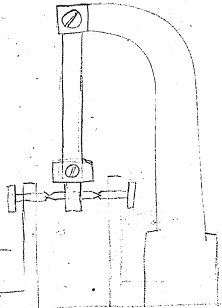
W. Cannon

19.

Electric Light Sept 13th 1878

Johnston & Co
Ja Edison

Chas. Johnston
M N Force



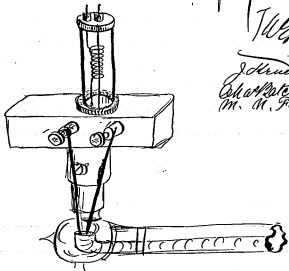
Copied in Ed. Research
1-27 of Oct 1878
Ed. Johnston

T. A. EDISON.

Menlo Park, N. J., Electric Light 187

102

Sept 17 1878
J. Edison
Chas. Batchelor
M. M. Force



Personally appeared before me this
13 day of the said Chas. A. Edison,
Chas. Batchelor, John Krussel, and Martin Force,
and acknowledged the above to be their signatures

Notary Public.

Copies on P. 188 Vol. 1. Ed. R. Newark

Oct 12, 1878

Wm. Coarman

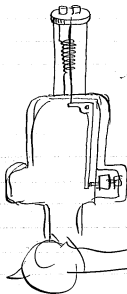
24

T. A. EDISON.

Menlo Park, N. J., _____ 187

103

Sept 17, 1878
J. Edison
Chas. Batchelor
M. M. Force



Personally appeared before me this
18 day of the said Thos. A. Edison,
Chas. Batchelor, John Krussel, and Martin Force
and acknowledged the above to be their signatures

Notary Public.

Copies on P. 188 Vol. 1. Ed. R. Newark

Oct 12, 1878

Wm. Coarman

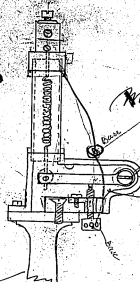
25

Electric Light Subdivisor

Lamp Stand

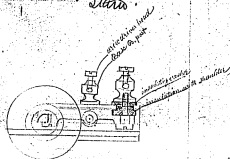
Sept 17 1898 22

Walden
Chat Batehlot
New Brighton Office



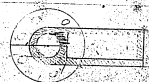
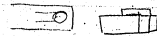
No. 1 in front of
this
also piece to go in front of
this

Start



with electric in front
Base for pipe

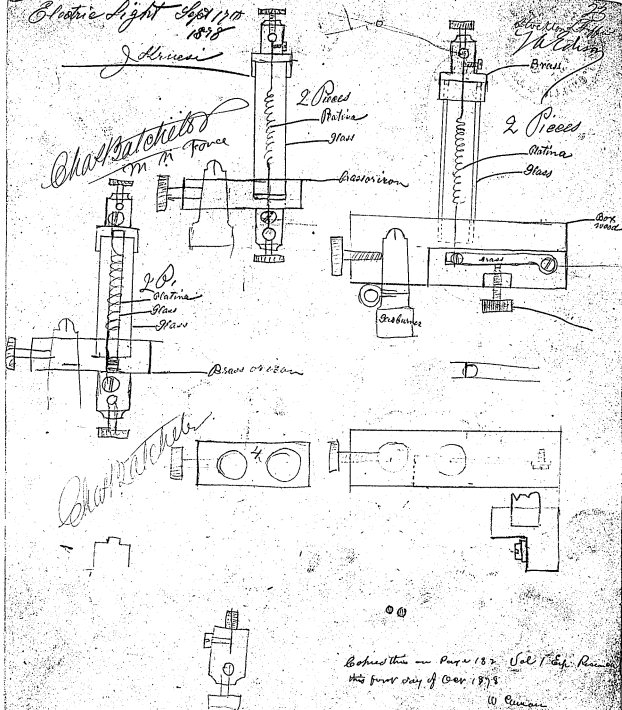
with electric in front
with electric in front



Checked over page 131. Ed. 1. Eng. Room
Oct 1, 1898
V.C. Linn

Electric Light Sept 17/11
1878

J. Hanson



Chas. Batehells
m m Force

Electric Light
J. Hanson

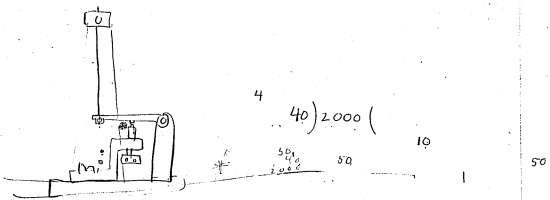
Referred to in page 187 Vol 1 of Patent
this four day of Dec. 1878

(1) Hanson

24

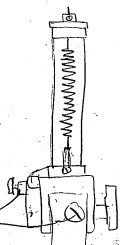
24

Reaction Light
 Capt. 17th Supt. Staff
 J. W. Edney
 Chas. Batchelor
 M. M. Power
 Johnson



15.

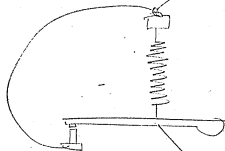
251



Copied on page 183 Vol. 1 Exp. Record
 Oct. 1, 1898
 M. M. Power

25

Sept 14 1898
Welding
Stocking
Bla. Patents
M M Force
Johnson



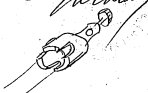
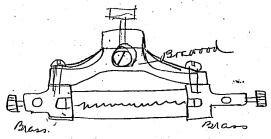
Copied on page 133 Vol 1 Est. Records
Dec 1, 1978
W. Cannon

29

26

Electric light - Sept 1876 1878 26

Johnston & Griffin
Johnston
Judson



Charles A. Seltzer
M. J. Jones

Make in this way with air holes
in the end



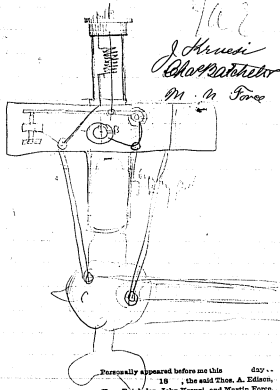
Copied this on page 134 Vol 1 Eff. Rucavots
Oct 1, 1878. C. Carnum

T. A. EDISON.

Electric Light 10th

Menlo Park, N. J., _____ 187

*Copied on page 149 Vol. 1, East River
Car, 7, 1878 P. C. M. S. C.*



Personally appeared before me this 25th day of 1878, the said T. A. Edison, Chas. Hatchler, John Kruesi, and Martin Force, and acknowledged the above to be their signatures

Notary Public

31

43

43

Electric light

40 lbs per foot = 211,200 lbs per mile

521.46
71.620

40 lbs per foot 243,480

Sept 20th 1878
Stricker & Hoff
2c Edison

2017.400
608.140
243480

243480	/	1192000	=	001
		473720		
		2785360		
		7782840		
		344600		
		2191320		

Chas. Patchett
0'00489 m in force
J. H. Mearns

2001400
243480
039320
001906
001467
001956
00978
22615061920

0'00489 mms
243480

60.8%
20.0%

1192.40
00489
1043200
9013960
476780
38293800

0'00489 mms.
12
00978

12000 feet of pipe 40 lbs per foot =

00978

0'00978 mms.

1.00000

8%

looked on page 143 Vol 1 Exp Researches
Mar 2, 1878 JDC

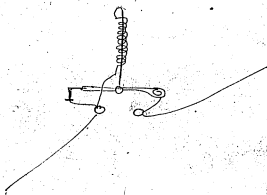
29
Electric Light Subdivision

29
Stock and Draft
Sept 21st 1878

Chas. B. ...

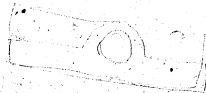
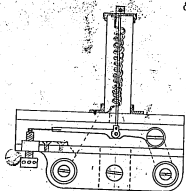
J. ...

J. A. ...
M. N. ...



Copied this on page 134 UOL
with Reamers Oct 1, 1878

J. ...



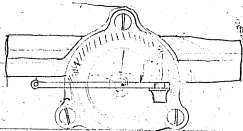
30

Beattie Light Sept 23^d 18.

J. H. Henshaw

Assistant Engineer
7th Colony

Charles Batchelor 30
m n force



1111



Copied on page 135. Vol. 1 - Esth. Records
Sept 1. 1878
10 Pages

34

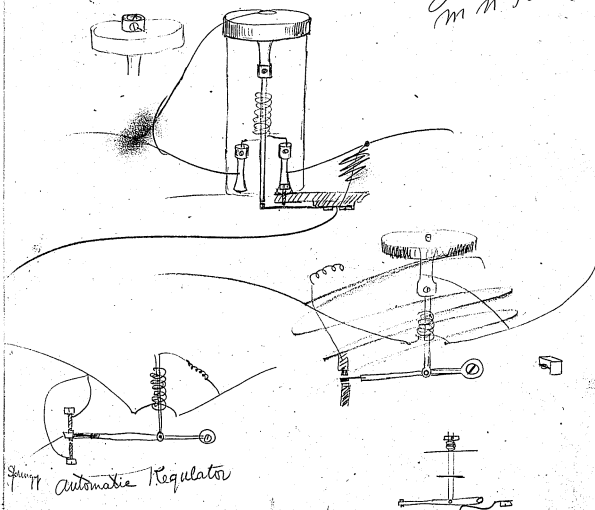
Electric Light Division

32

Sept 24 1878

Saldon
Chas. Lake

J. H. Huesel
M. N. Groves

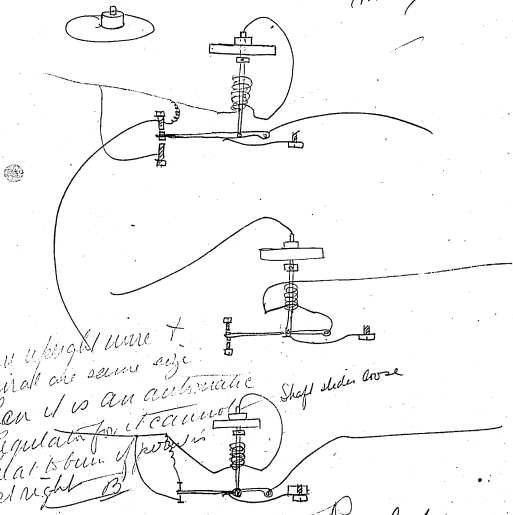


Spring Automatic Regulator

Copied on page 136 Vol 1 Exp. Research
Corl. 1878 W. Cassin

Edison's Electric Light
23 Subdivision

Sept 24th 1878
Chas. Satchel
J. Thrucci
J. A. Edison
m m space



Automatic Regulator

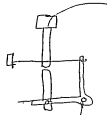
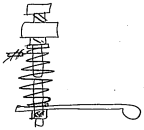
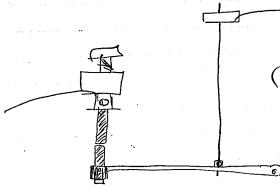
copied on page 137 Vol 1 Oct. 1. 1878

W. Thomson

93
Electric Light Expt. 25
Electric Light Sept 25, 1878

Franklin D. Hoffman
Chas. B. Schemm

Wm. J. Edison
J. A. Luman
W. C. Luman
M. M. Force
J. H. Munn



copied on page 151 Vol 1 Exp Researches
Oct 7, 1878 W. C. Luman

T. A. EDISON.

38

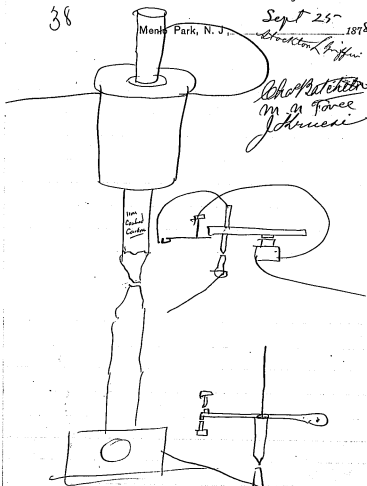
Electric Light 38

Sept 25 - 1878

Menlo Park, N. J.

Edison's Light

*Edison's Light
in a force
Johnson*



*Copied on page 140. Used Ed. Research
Oct 1, 1878
H. Johnson*

38

T. A. EDISON.

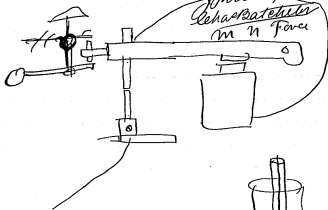
39

Electric Light

Menlo Park, N. J.

Sept 25 1878

*Edison's Light
in a force
Johnson*



*Copied on page 140 Vol. 1. Ed. Research
* Oct 1, 1878
H. Johnson*

39

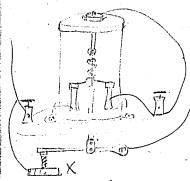
Electric Light division

Sept 25 1885
G. P. Batcheslor
41 E. Cambridge St.
Boston, Mass.

36

We have now a perfectly regulating light

Spiral wound double to allow for expansion, and the wire in middle same wire as the spiral, only the spiral is flattened to make stinger, and allow more heating surface.



As the platinum rod expands it closes the cut off points at X, and when the spiral & platinum rod are the right size, this is a perfectly automatic cut off; ^{So that} however much current you put on it will regulate before burning up, although the contraction when cool has allowed the points to separate $\frac{1}{8}$ inch.

Copied on Page 439 Vol. 1.
Bates Remington Court, 28

G. P. Batcheslor

W. C. ...

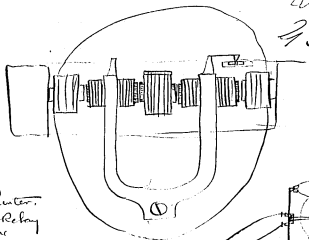
Martin M. Force
Jr. ...

Electric Relay

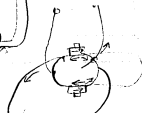
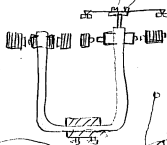
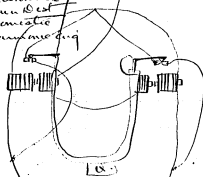
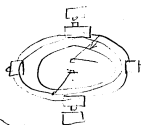
Sept 25 1878

94
94
Shos A Edison
Chas B. Johnson
W.C.

J. E. Cannon
M. N. Ponce
J. M. ...



- Stock Printer
- Pressure Relay
- Microphone
- Telephone
- Electric pen
- Instrument
- Photograph
- Reflecting Telescope
- " " Valve
- Resonant Fork
- Micrograph Relay
- Pressure Relay
- Musical Telephone
- Automatic
- Amplifier
- Samuel
- Harmonizing

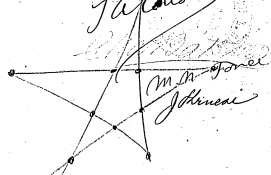
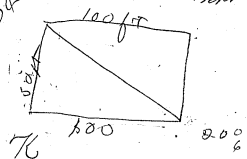


Edison on page 157-158 / Exp. Record
Vol. 1 / 1878 / J. E. Cannon

34

Sept 25, 1878

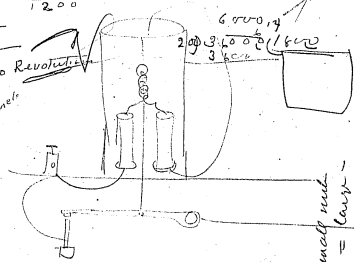
Streeton Griffith
J. A. Lawson



76

$$\begin{array}{r} 200 \\ \underline{1200} \\ 1336 \\ \underline{765} \\ 39440 \\ \underline{8000} \end{array}$$

Diameter



6000.14
 2003
 36000
 1800
 X = small unit
 X + 18 = 76
 X + 18 = 76
 X + 18 = 76
 X = 28
 18
 46

Lawson had 76 apples together & me had 18 more than the other how many each

~~3 Apples~~

29

Copied on Page 139 Vol 1 Capt. Rankin
 76

$$\begin{array}{r} 18 \\ \underline{58} \end{array}$$

 29

$$\begin{array}{r} 18 \\ \underline{47} \end{array}$$

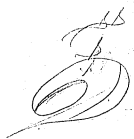
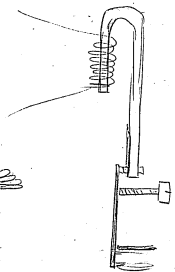
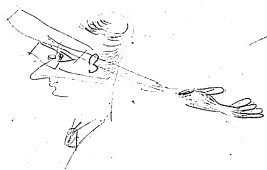
 1878
 M. Rankin

35

35



W Edison
 Vacuum to Sept 25, 1878
 Mr. Lammie
 M. N. Force
 Johnson



Called for page 139 Dec 1 1878
 W. Lammie

Electric Light division

Sept 26 1888 #6
J. H. Thompson
Thos A. Edison

40

John C. Ketchum

Martin N. Forge

Experimented with incandescence of sticks of carbon = it will expand and cut up similar to platinum & other metals but when brought up to give the same light as platinum it melts very easy

I put sticks of different thickness & length of carbon in place of platinum in our light stand, result was not comparable with platinum

We want Iridium or osmium -
also try Rhenium -

Sticks of finely divided platinum -

Wm. Coarman

Copies on page 142. Vol 1. Exp. Researches 1888
W. C.

Electric Light Subdivision

Sept 26th 1878
Wednesday
Chas Batchler

39

Last night we placed ^{around Johnes} another glass tube, & cemented it at bottom, & filled the intervening space with Alum & water, to prevent in a measure the radiation of heat from it. This has the desired object to a great extent - but we want something that will do it better

Copied on page 141 Vol 1 Coll. Reson
@or 1. 1878
Mr. Cannon

H5

Electric Light Apr 27, 1898

$$\begin{array}{r} 164 \\ 22 \\ \hline 12 \\ 4 \end{array} \quad \begin{array}{r} 64 \\ 22 \\ \hline 42 \\ 12 \\ \hline 504 \end{array}$$

$$\begin{array}{r} .32118 \\ 504 \\ \hline 1618442 \\ 160390 \\ \hline 16187472 \end{array}$$

7a Edison
Chapatchels
 50.2686 inches area
 12 m. in force
 603.1872 solid content inches

$$\begin{array}{r} .32118 \\ 603 \\ \hline 46754 \\ 1921408 \\ \hline 19367154 \end{array}$$


128

3/3
-45

$$\begin{array}{r} 45 \\ 2 \overline{) 1155} \\ \underline{90} \\ 255 \\ \underline{225} \\ 30 \end{array} \quad 113.400$$

$$\begin{array}{r} 45 \\ 1 \overline{) 90} \\ \underline{90} \\ 0 \end{array} \quad \begin{array}{r} 13 \\ 6 \overline{) 78} \\ \underline{78} \\ 0 \end{array}$$

$$\begin{array}{r} 48.4335260 \\ 193732 \overline{) 113.400} \\ \underline{10860} \\ 4800 \\ \underline{5756} \\ 2320 \end{array} \quad \begin{array}{l} 262 \\ 276 \end{array}$$

$$\begin{array}{r} 21 \frac{1}{2} \\ 9 \\ \hline 189 \end{array}$$

Order on time with Joe L. ...
Oct 27, 1898

me
-5H

Electric Light Subdivision Sept 27 1947

#7

Streeton Buffum

Max Batchelor

Marvin M. Joyce

J. H. H. H.

Made cylinder of Caustic Magnesia pressed
for light and it retains its heat but
the loose unpressed does it much better

think the idea that probably coating
the alumina spiral with a saturated
solution would be what we want.

Glutia Alum very good bright + leave
good deposit on spiral

Sulphat Magnesia
more brilliant light leaves little
deposit.

Copies this on page 146. Vol 1
EPR Research Oct 2, 1948

Lingstall Soda no good. ^{Wm Cannon}

Alurate Potash no good

Chloride Sodium very good, small deposit

Acetate Lead no good melts platinum

Sulphate Thallium no good

Carb of Lithium. Fair smeltly like Oxalate Cerium

148
Oxide Zircon, not very good
try it further

Nitric acid fair - redish

Wolfram not good -

Caesium alum not quite so good

Osmium - n.g.

Strontium n.g.

Protobchloride of Tin N.G.

Lactate Zinc - fair

Caustic Soda n.g.

Bromide of Cadmium N.G.

Carb. Lithia n.g.

Oxide of Uranium acts like Magnesia

Ox. Beryllium - not good

Acetal Alumina - n.g.

48
checked on p. 147 Dec 1. Ent. Researches 01121878

MC

46
Electric Light Submersion Sept 27, 1898 146

Stockton, Calif.
Chas. B. Atchelor

Length of time it takes to heat
to red heat the following substances:—
Remarks

Minutes for 0.4 gms — Seconds —

Kaolin — 1½ —

Serpenti — 1 —

Serp. Baryta — 3 —

Whiting — 5 —

Fire clay — 3 —

Silicic Acid — 7 —

Woodbridge Clay — 4 —

Powd. Marble — 5 —

Pumice Stone — 5½ —

Platinum Black

Carbide Magnesia

Powd. Magnesia

Carbide Magnesia

Oxalate Cerium

Copy of this on page 145 Dec 1
Chas. B. Atchelor Oct 2, 1898
W. C. Atchelor

Take 7 to heat first time

first rate heat before Platinum
heats white when platinum red
heats white when platinum red
contracts less by heat than Carb. Mag.
Excellent. Good gets red
before platinum spon

41

T. A. EDISON

41

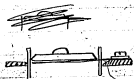
Menlo Park, N. J.

Sept 27 1878

T. A. Edison

Mrs. M. C. Meusi

Will you fix this platinum
to the glass, and cut away the
brass right under ^{the tag} and make
the tag on it narrower



also do

so as to make
the platinum here
no pull on it
whatever

Richardson

J. Kruse

Edison page 142, Vol. 1
Ed. Reviewer's copy 2-1878

Stockton & Griffen

M. R. Force

FR Sept 18 1878 42

Electric Light
Sept 27, 1878
Stockton Office



Copy this on page 143. Vol 1 Exp Research
Oct 2, 1878
M. C. Force

51

Sept 27 1878 ¹⁸⁷⁸ 95

Callahan

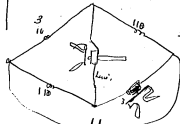
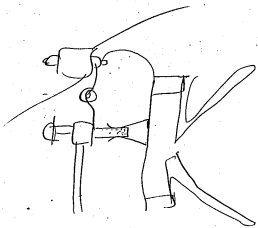
Charles Ketchum

U.S.

W. L. Garrison

M. M. Force

Skinner



360709

70 7 700

36000

3607

3000

2000

3000

3000

3000

3000

3000

3000

3000

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5000 gward

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3000

W. L. Garrison
M. M. Force
Skinner

Collected in 1878 - 1884, Vol. 1, E. C. Richardson
Oct 7, 1878

W. L. Garrison

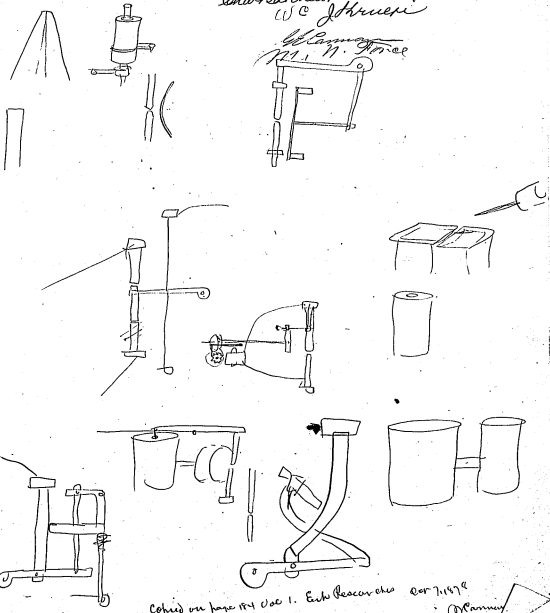
52

Electric Light.

September 27 1878

W. L. ...
West ...
1878

Thomas A Edison
Charles F. Johnson
W. C. Johnson
W. L. Johnson
1878

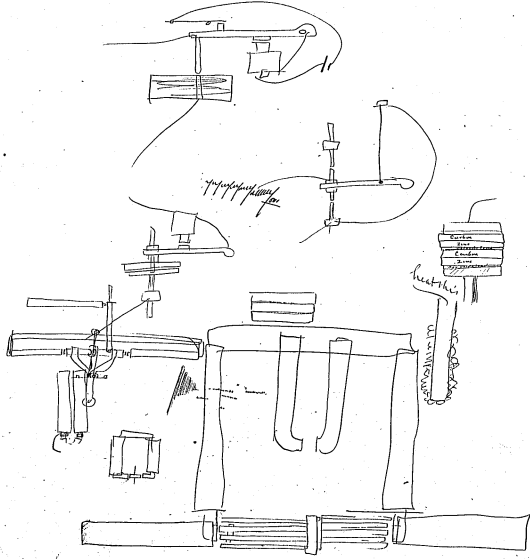


Copied on base of Vol. 1. Each Researcher for 7,157^e
Manning

Electric Light September 1878 27.

Edison
Charles F. Johnson
M. M. French

97
Society of Engineers



copied on May 2 1885 Vol 1 East River
Oct 7. 1875 M. M. French

100

Sept 27 1878
7ds
Make a lampwick of pressed platinum black
and asbestos on outside, also try a pencil

Electric Light, try palladium

Chas. Batchelor
Chas. P. Edison
J. A. Edison
W. E. Edwards
M. M. Force



to open on page 187 of Oct 1878
this 7th day Oct 1878 W. C. Canna

Electric light

September 27, 1898

99
J. A. Dawson
Chas. C. Chubb
SVC
In an office
Zinc & platinum
J. J. J.

Make alloys of Silicon with Aluminum
for incandescence. I think that a little aluminum on
platinum will get rid of the brittleness,

Between the two cells which I have around the
incandescence spiral put finely divided ~~silicon~~
ammonia-alum. this will react & the water
will evaporate. This will keep out heat from
radiating;

Try Chromium, between platinum points
make same sulphide silver by ~~fusing~~ melting (Hydrogen sulphide
acid ch₂ ag) sulphide silver - is malleable & soft may
make a plug for battery -

Try powdered Antimony + Bismuth (early product) for
battery contacts -

also amorphous Antimony (to make. X. p 408-9. By Bloxam

note coat thin ferroplate with 1/8 inch of melted resin - sawn, shells etc
to cracks - make a hard rolled tin droplamp.

Electric
Try Tungsten = to make. (By Blox. p 421.

Molybdenum - - (")

copied on page 186. Vol 1. Exp. Res
Dec 7. 1897. W.C. Cannon

Electric light

September 27. 1878

W. A. Harrison
Charles Webster
J. C. Harrison
In a paper
Zinc & Platinum
J. Harrison

Make alloys of Bismuth with Aluminum
for ~~manometer~~ ^{manometer}; I think that a little aluminum or
platinum will get rid of the freckles,

Between the two cells which I have around the
meandered spiral put finely divided ~~aluminum~~
ammonia-alum. this will melt & the water
will evaporate. This will keep out heat from
re-upting,

Try Chromium, between platinum pearls
make same sulphide silver by ~~fusing~~ melting (Hydrogen
acid chl Ag) sulphide silver - its malleable & soft may
make a film for telegraph -

Try powdered Antimony & Bismuth (early product) for
tantalum button -

also amorphous antimony (to make. X. p 408-9. Big Block)

note coat thin ferroplate with $\frac{1}{16}$ inch of melted resin - sawn, shall be etc
to cracks - make a hard rolled tin depl. gun

Try Tungsten = to make. (Big Block, p 421.

Molybdenum - - (")

expd on page 150. J. C. Harrison
Oct 7. 1878

Electr. Light Expts. Sept 28 1878

49

(Continued)

Stockton, Calif.

Chas. Mitchell
of the
Martin, N. Y. Co. Cal.

Antimonic Acid. Keeps its heat twice as long as platinum spiral, and both same color. (red). -

Bengolic Acid Burns up - makes good Lamp black.

Silicic Acid N.Y.

Asbestos = Incandescent. - GOOD
wind platinum wire with it

Bronze powder takes long time to get heat & stays red not a very long time.

Nickel siliceous very dull red but keeps it long time

Carlin's phosphorus takes a very long time to heat up and takes several seconds to cease luminously after taken from flame.

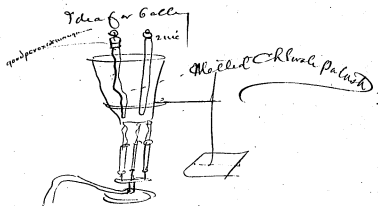
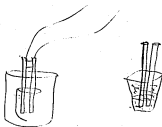
Same with Grotthus Phos -

Wachs. Phos - same & quicker -

Potassium - not so good.

Copy on page 118 & 119 of the Exp. Report
Oct 2, 1878
JOC

8998
 Spt 25 1878
 WASH DC
 U.S. DEPT. OF AGRICULTURE
 L.A.P. ^{Wm. S. G.}
 Chatterkotekto Lib.
 U.C.
 W.C. Cushman
 M. M. Ford
 Johnson



EP

looked on page 186 Vol 1 Ex Researches
 Oct. 7, 1878
 W.C. Cushman

53

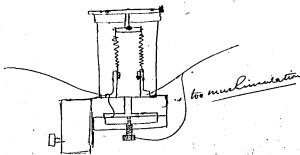
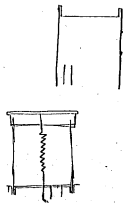
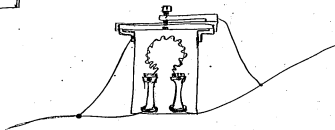
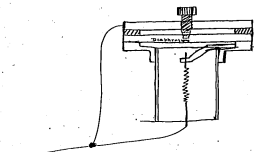
Electric Light
Division

Sept 20th 1878, 53

40 E. Street, Prof. C.

Chartwellor
M. M. Frost

Edison's plan of cutting off by
Expansion of air working a diaphragm
to close points.



Copied on page 157. Doc 1. Exp. Records
Oct. 7. 1878

M. M. Frost

54
Electric Light

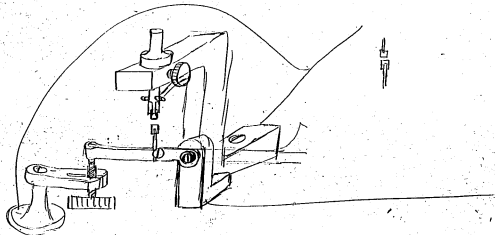
Sept 30 1 1/4 54

308 Stockton Bldg

Chas. Batchelor

Johnson

Make instrument for testing different



Copied this on page 152 Vol 1
Est Record Oct 2 1898

J.C.

⁵²
Electric light

Berium -

Chromium =

Boron = from Borax in arc of carbon light
good conductor - metallic fracture =
brittle - forms bent cake -

52
Sept 20 1878
302
Charles Batchelder
M. N. Foster
J. H. Jones

Copies on page 150 Vol 1 Exp Researches
Oct 2. 1878

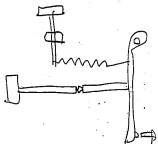
W. C. C. Carrigan

51

Electric light

Sept 30th 1898
the student
Char. Satchel
M. J. Rowe
M. J. Rowe

Chromic acid burnt in flame
Residue is not a conductor of electricity



Copied on page 150 Vol. 1 Expt. Researches
Oct 2. 1898
W. C. C. C.

Electric Light

Sept. 31 1898
J. A. Edwards

Chas. C. Atchison

M. M. Jones
J. M. Jones

Effect when held in flame
by platinum wire of -

Chromium

When held in light gets red
but not quite so much as platinum
it however keeps its redness 3 times
as long as the platinum.
When held in ^{covered} small spiral heater by
4 cells carbon no good

Scale of Cerium

Burnt

Scale on top
of burner
1898 Oct 1
1899 Jan 1
1899 Feb 1
1899 Mar 1
1899 Apr 1
1899 May 1
1899 Jun 1
1899 Jul 1
1899 Aug 1
1899 Sep 1
1899 Oct 1
1899 Nov 1
1899 Dec 1

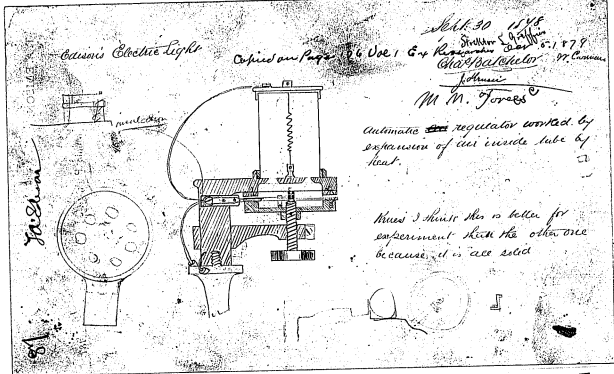
I find that when I put small pieces of
this on the edge of the tansen burner they
stay there and give off a very brilliant light,
and I see no diminishing of intensity in
two hours. I had been watching it
I find however it gets some of its brilliancy
by being supplied with oxygen as if I
shut off the air in the bottom holes in burner
the flame is brighter but the cerium
gets out almost entirely.

Chromium:

with 40 cells battery a small piece of chromium
gives a light similar to Libron's (roof)

Chromic Acid

In flame = burns with very bright light
and residue swells out and keeps hot
but not longer than platinum however
in fact it gets hot & loses it heat both quicker than



T. A. EDISON.

Menlo Park, N. J. Sept 31 1878

Have 2 of the new lights ready if possible & put them also on the two we have on stands

Batcher

Use no 14 wire for connections from top of light and flatten at the end where screw goes through. Make the copper connecting piece thicker

64

65

Electric Light Subdivision

Oct 1st 1878

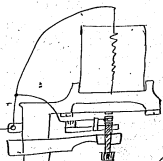
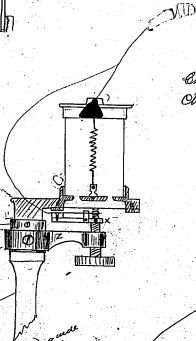
W. Lewis
Chas. Patchell

J. Adams
111-11 1/2 Pines



Expansion of air in airtight
Chamber works diaphragm

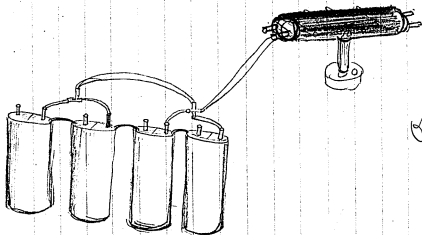
No insulation
encloses the spring



Change turns round handle
an x of every and find
at 2

W. Lewis
Chas. Patchell

66



Oct 1, 1878
T. J. Adams

67

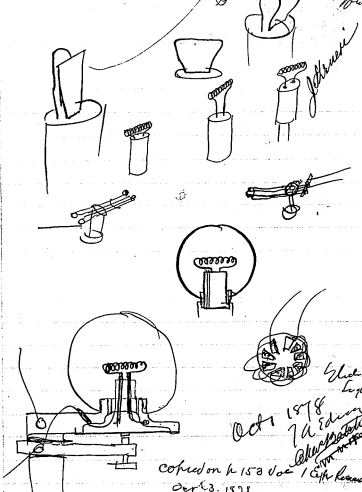
T. A. EDISON.

5-6

Menlo Park, N. J.

Edison's Patent 56

Johnston



Oct 1 1878
 T. A. Edison
 Menlo Park, N. J.
 copied on h 158 doc 1
 Oct 13, 1878, r.e.

68

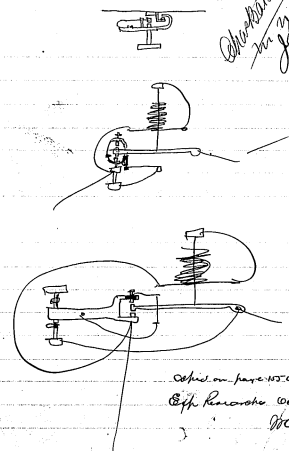
T. A. EDISON.

58

Menlo Park, N. J.

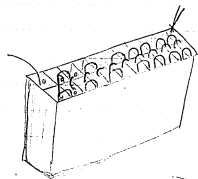
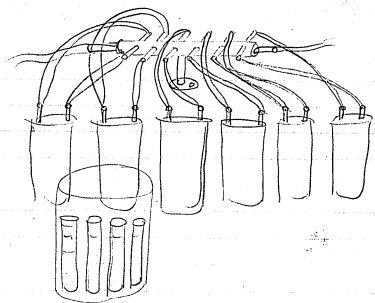
Oct 1 1878
 Electric Light
 T. A. Edison
 Menlo Park, N. J.

Edison's Patent
for an Improved

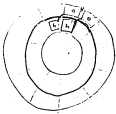


copied on page 115, doc 1
 Edg. Research 10/13/1878
 W.C.

69



Oct 1 1878

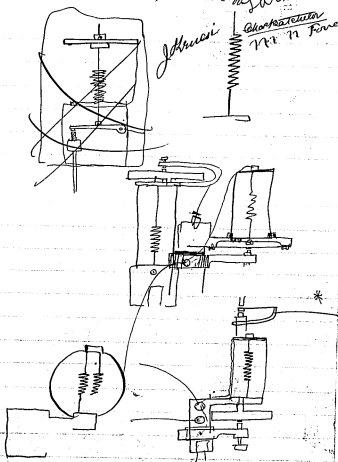


T. A. EDISON.

Electric Light 59

Menlo Park, N. J., Oct 1

Johnson
Character
Mr. N. P. ...



Copied on Jan 1878 Sec 1 Exp Room
 Oct 1 1878

T. A. EDISON.

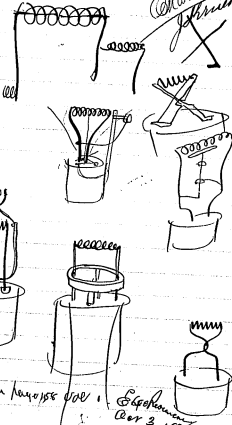
for Electric Light

Menlo Park, N. J.,

Oct 1 1878

63

Edison
in the presence
of Mr. Johnson



Copied on page 105

Edison
Oct 3, 1878

74


T. A. EDISON.

63

Menlo Park, N. J.,

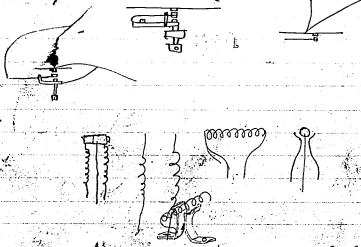
Nov 1 1878

Edison
in the presence
of Mr. Johnson

New Model
Sprial  as mounted right in
plastic form
Contact parts made one solid and
small spring with spark pair



Diaphragm model

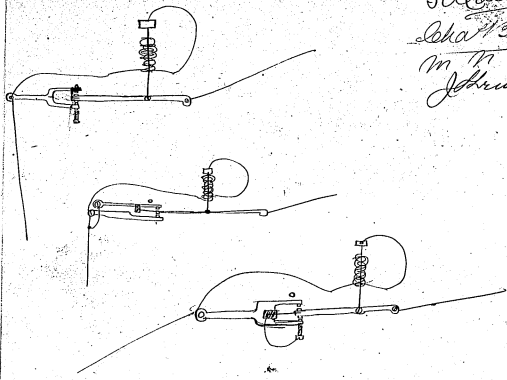


Copied on page 105
Oct 1, 1878

75

55

58
Electric Light Co. Oct 1, 1878
J. A. [unclear]
Chas. B. [unclear]
M. M. Fox
J. H. [unclear]



copied on page 152, vol 1 Eth. Research
Oct 2, 1878
J. H.

75	1
	2

T. A. EDISON.

Menlo Park, N. J.,

Oct 2 1878

Mr. Russell

Chas. Batchelor

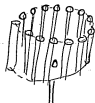
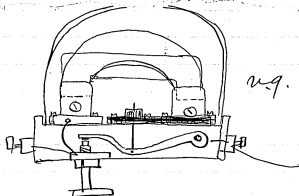
Electric Light

I want to have 5 lamps to show-

- 1 They all want to have safety parts joints on lever.
- 2 They all want mounting on bases with bindposts
- 3 They all want to have No 28 Iridium wire on spirals and ^{expansion} rods.
- 4 They all want to have 14 copper running from bindpost up to light
- 5 They all want No 28 copper wire connecting the shaft to bracket (amid shaft parts)
- 6 Two of these 5, upstairs, have platinum on, they also have thin copper connections from bindpost to working parts. This must be Iridium and copper thicker

Oct 2 1878

T Edison

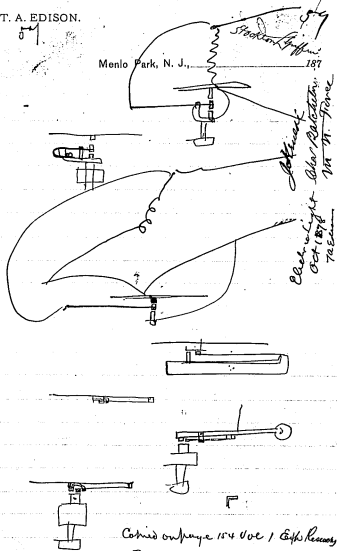


T. A. EDISON.

57

Menlo Park, N. J.,

1878



Good work
Wm. H. Jones
Edison
Oct 1878
72 Edm

Copied on page 154 Vol 1 Exp. Recs
 Oct 7. 1878
 1878

79

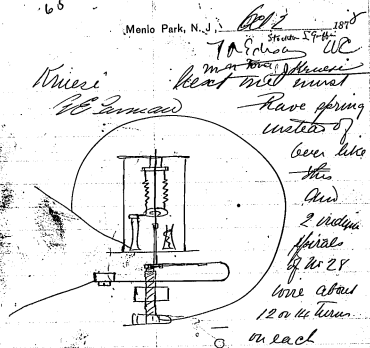
T. A. EDISON.

65

Menlo Park, N. J.,

65

1878



Wm. H. Jones
Edison
Oct 1878
72 Edm

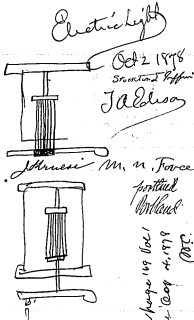
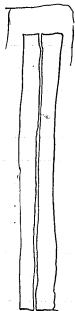
Have spring
 instead of
 one like
 this
 And
 2 vertical
 spirals
 of No 28
 wire about
 12 or 14 turns
 on each

Copied on page 160. Vol 1
 Exp. Research Oct 11, 1878
 Wm. H. Jones

81

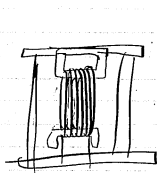
78
T. A. EDISON.

Menlo Park, N. J., 1878



Electric light
Oct 2 1878
Stratton & Hoff
J. A. Edison
M. M. Force
Portland
Maine
P.M.

Copies on page 149 loc 1
811
Edison Research Co. 41, 1878



82

79
T. A. EDISON.

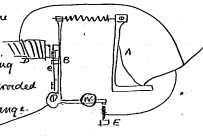
Menlo Park, N. J., 1878

Musei

Make an experimental instrument on a sounder base like this: -

A is a bracket to hold on end of spiral

B is a pivoted lever holding the other end, it is provided with a double point arrangement C.



D is regulating point. E is the safety point of the spiral track the lever falls by weight W on to point

Make spring C very delicate and put hold back clasp to point.

J. A. Edison
Stratton & Hoff

Copies on page 170 loc 1

Edison Research Co. 1878

M. M. Force

83

Electric Light

Oct 3rd 1878

J. Edison
Charlestown
Mass

W. Larned

M. N. Jones

Street 27-30

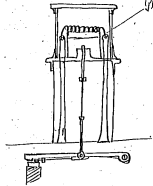
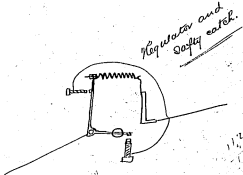
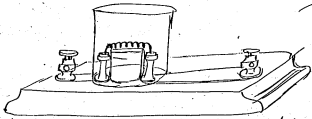


Plate of Glass



Regulator and Safety catch



Make base with 2 posts + glass over to put any thing in

Revised on page 161 Vol. 1. Exp Research Oct 11 1878

W. Larned

Electric light

Oct 2nd 1898

Joe

Char. Patchen

Street 9-10

Am N. Gas

Titanium :- got by melting between Carbon fork
Very good light by incandescence
Has to be very hot before it becomes
luminous - current will go through
it. Has a very thick oxide layer
but with 25 cells called get a
deflection of 1 degree on 1 coil
Strike it and get a deflection
90 on 1 coil and 16 on 4 coil

Manganese :- ditto

Bad conductor, could get nothing at all
through the oxide and
only $\frac{1}{2}$ degree through the metal when
broken :- on 1 coil and 25 cells called

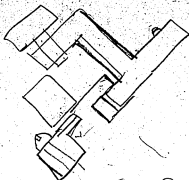
Comes on page 171 Soc. Exp. Research
Dec. 1898.

wc

87

90

90



J. A. Jensen
W.C.

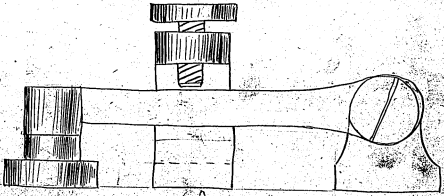
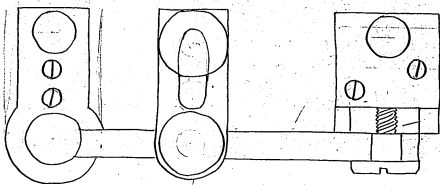
Patented 2/24

Oct. 30 1898

Johnston
M. M. France
Det. 5. 1898
W. C. Barman

Entered on page 174 Vol 1 Copy Researcher

Chas. B. Nichols



88

T. A. EDISON.

68

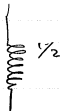
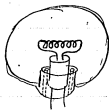
Electric light

08

Menlo Park, N. J., Oct 3 1878

J.A.P.
J. H. Johnson & Co.

M. W. Force
Johnson



Copies on page 161. Vol 1
Edis. Records. Box 11-1898

1878

89

T. A. EDISON.

69

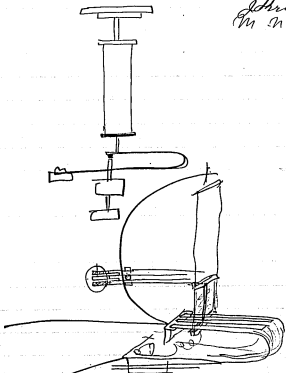
Electric light

69

Menlo Park, N. J., Oct 3 1878

J.A.P.
J. H. Johnson & Co.

M. W. Force
Johnson



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Edis. Records. Box 11-1898

1878

90

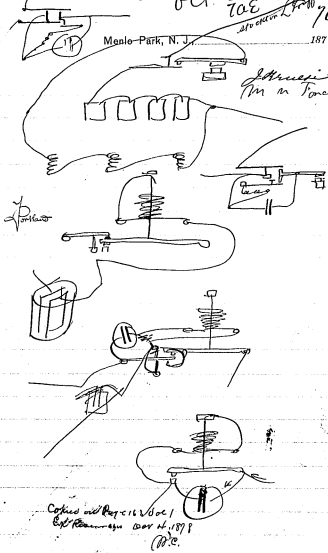
70
T. A. EDISON.

Electric Light
Oct. 3rd 78
70E
M. P. Force
1878

Menlo Park, N. J.

1878

M. P. Force
1878



Copies sent Reg. U.S. Pat. & Tm. Office
Oct. 14, 1878
M.P.

91

T. A. EDISON.

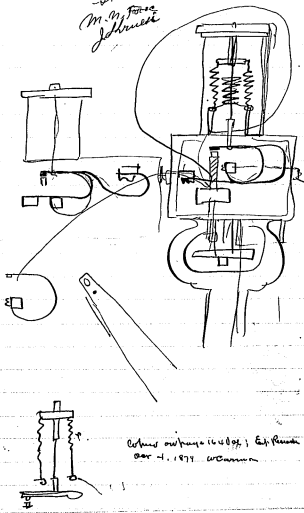
71

Electric Light. 71

Menlo Park, N. J.

1878

M. P. Force
1878



Copies sent Reg. U.S. Pat. & Tm. Office
Oct. 14, 1878
M.P.

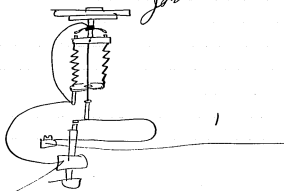
92

T. A. EDISON.

72

92

Menlo Park, N. J., Oct 2 1878
Electric light
 T. A. Edison
 M. M. Force
 Worcester



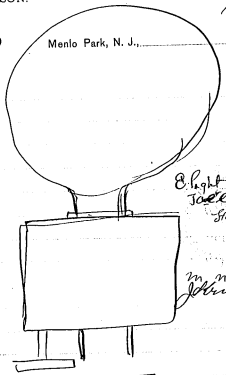
Copied on page 165 Vol 1
 Experimental Records Oct 11, 1878
 W. M. M.

T. A. EDISON.

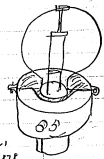
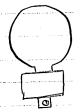
73

93

Menlo Park, N. J., 1878



Light
 T. A. Edison
 M. M. Force
 Worcester

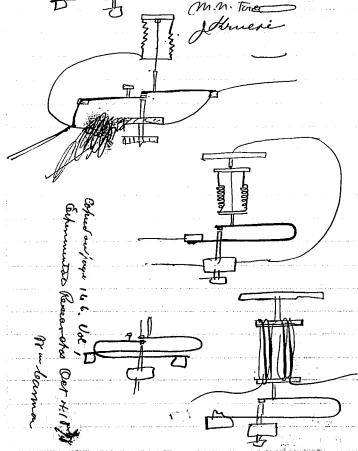
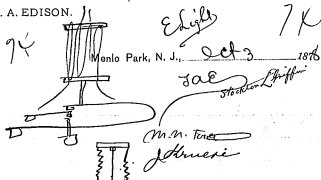


Copied on page 165 Vol 1
 Exp. Records Oct 11, 1878
 W. M. M.

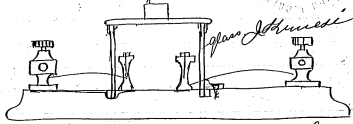
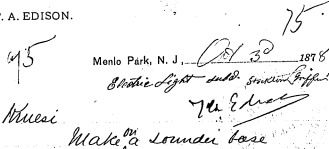
93

94

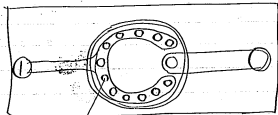
T. A. EDISON.



T. A. EDISON.



make connections for the inside part, so that
I can put them any where for circular
or straight spiral



the holes x in the upper slip and through the
base so that I can shift the post
close to the other one or keep further away.

Johnston
Patchelor
M. N. Force

95

96

T. A. EDISON.

76

16

Menlo Park, N. J., ~~Oct 28~~ 1878

Jackson :=



the little holdback
for this spring
at x is too far
away from the points you must
put it right close up to them only
to away from them

Batchelor

T. A. Edison
M M force
Structural Effort

Copies on page 168. Vol 1
Entered this 4th day of Oct 1878
M. C. Mason

97

T. A. EDISON.

50

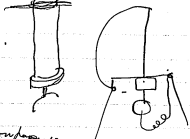
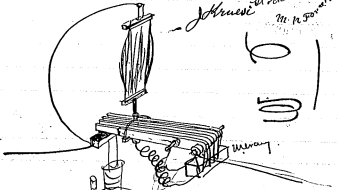
E Light

80

Menlo Park, N. J., Oct 3 1878

.7AE

Char Batchelor
Structural Effort
M M force



Copies on page 174. Vol 1
Copy Received No. 1578 of 1878

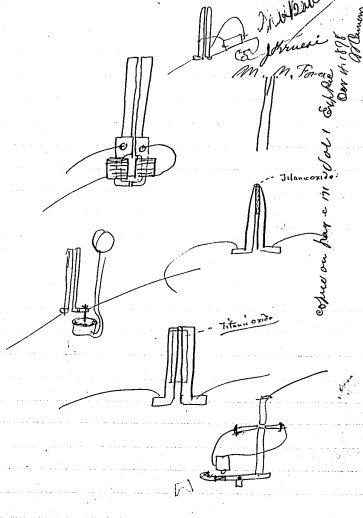
98

T. A. EDISON.

87

Menlo Park, N. J.

Edison
at 3
Patented
M. M. Tomasi
Oct 11 1878



83

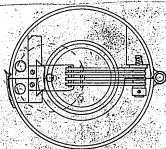
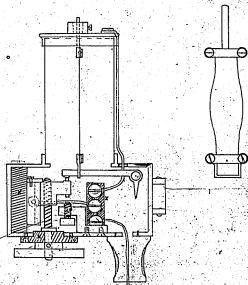
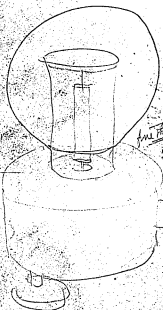
Electric Lighting
Subdivision

Oct 3rd 1876

J. A. Edison
Electrical
Inventor

Instruction

xxx are enlarged for use

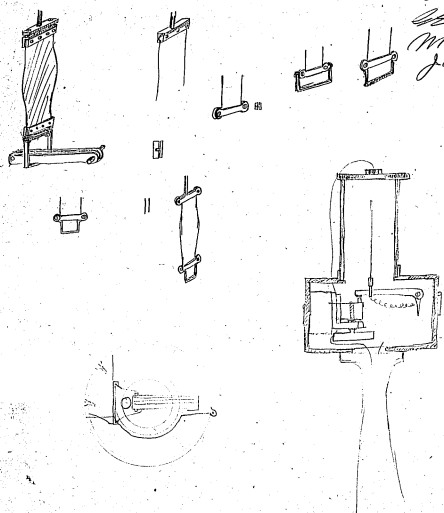


Copied in *Edison's Papers* Vol. 1, Page 172 Oct 4, 1876
Wm. Cannon

100

Oct 2nd - 1878
JAE
Chattanooga
84
No. 101
1878

Way of fastening the plate to the end.



J. H. Smith
W. C.
W. C. Cannon
M. M. Force
J. H. Smith

Copied on page 173. Vol. 1 Tech Research
Box 5. 1878

W. Cannon

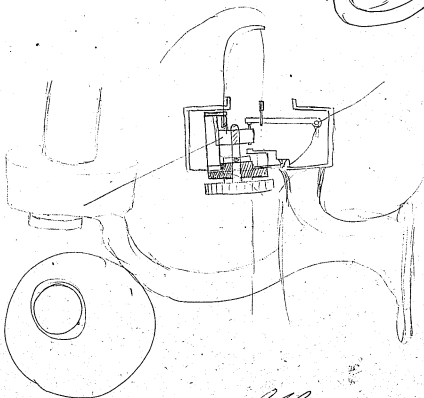
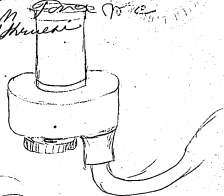
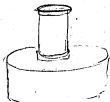
101

85

85

Electrical Oct 3, 1878

J. Edison
Charles F. Johnson
M. M. Force & Co.
New York



Edison
show out have 114 Vol in Resistance
Oct 25 1878

102

86.

Electric Light
Subdivision

Oct 9, 1898

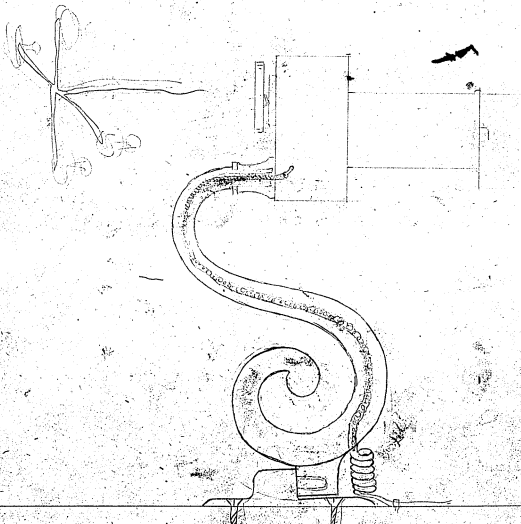
86

J. A. Edison
Chas. Batchelor

J. H. Russell
M. A. Force

wall bracket

5.00.



Copy on page 175-501 Chas. Batchelor Des. 85. 171.

M. A. Force

103

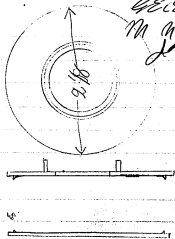
T. A. EDISON.

101

Menlo Park, N. J., _____ 1878

Electric Light Oct 5, 1878
 Electric Light
 Oct 5, 1878
 Jas. B. Bateator
 Chas. P. Edison
 Copies on page 187 Vol. 1. 64
 Researches Oct 7, 1878
 Wm. Barrum

J. Edison
 G. E. Carrum
 M. G. Force
 J. K. Mearns



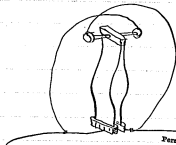
T. A. EDISON.

Electric Light 10-5-78

Menlo Park, N. J., Oct 5 1878

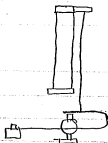
JAE

J. K. Mearns
 Chas. Bateator
 G. E. Carrum
 M. G. Force



Personally appeared before me this _____ day of _____ 1878, the said Thos. A. Edison, Chas. Bateator, John Krewal, and Martin Force, and acknowledged the above to be their signature

Notary Public



Witness my hand and seal of my office this _____ day of _____ 1878

J. K. Mearns

106

107

T. A. EDISON.

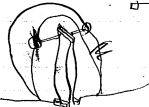
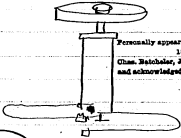
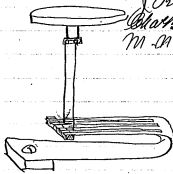
looked on page 108 of 1 Oct 1878
1878

Menlo Park, N. J.,

106
Oct 7 1878

Electric Light
TAE

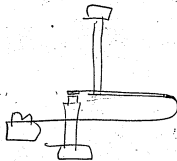
J. H. Hunt
Chas. Batchelor
M. M. Force



Personally appeared before me this 6th day of
1878, the said Thos. A. Edison, J. H. Hunt,
Chas. Batchelor, John Kroust, and Martin Force,
and acknowledged the above to be their signature

Notary Public.

108



Oct 7 1878
TAE
Chas. Batchelor
M. M. Force
J. H. Hunt

Electric Light

looked on page 108 of 1 Oct 1878
Oct 7 1878
M. M. Force

Personally appeared before me this 6th day of
1878, the said Thos. A. Edison, J. H. Hunt,
Chas. Batchelor, John Kroust, and Martin Force,
and acknowledged the above to be their signature

Notary Public.

109

Electric Light

116

Oct 14 1878

Charles F. Johnson

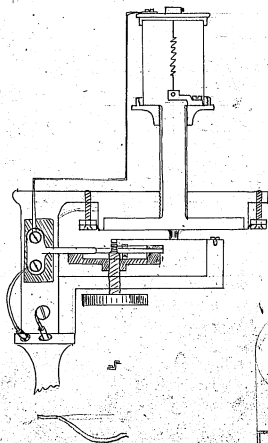
J. Kruesi

J. Edison

G. E. Carver

M. M. Jones

Light regulated by expansion of a
column of air heated



Closed up 194 Vol 1
Ser 14 1878
M. M. Jones

110

October 5 1878 '116

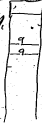
Jackson

Electric Light

Edgar A. Johnson

W. Garrison

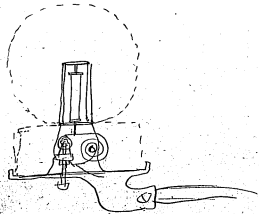
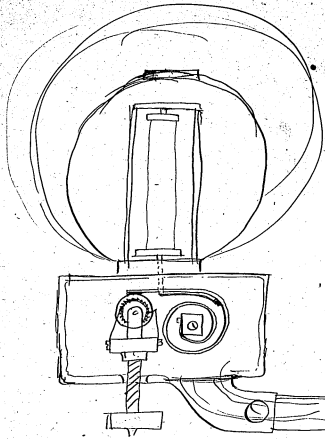
Mr. N. Force



189
1822

18. No 10. - $\frac{1}{8}$ dia

$\frac{1}{8}$



Edgar A. Johnson 1878 U.S. Pat. Office Oct. 11 1878
W. Garrison

124

Electric Light

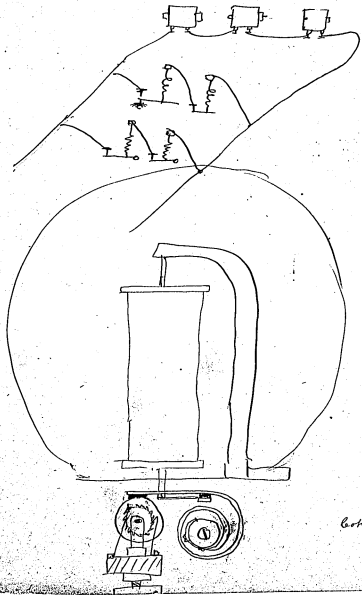
Oct 8 1878

T. Edison

Charles Batchelor
M. M. P. 24

J. E. Casman
Johnnie

Three magnets Connected for velocity



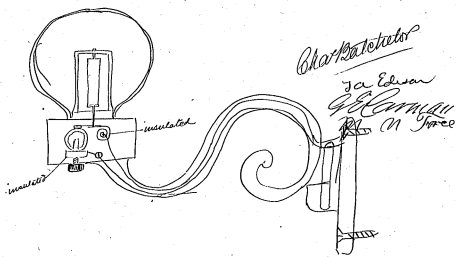
Magnets Connected for velocity

Personally appeared before me this 18th day of Oct. 1878, the said Thos. A. Edison, Chas. Batchelor, John Kruss, and Martin Pore, and acknowledged the above to be their signature

Notary Public.

Certified on P 204 Vol 1 City Records
Oct 23. 1878
W Casman

Electric Light Oct 8, 1875 ¹¹⁷

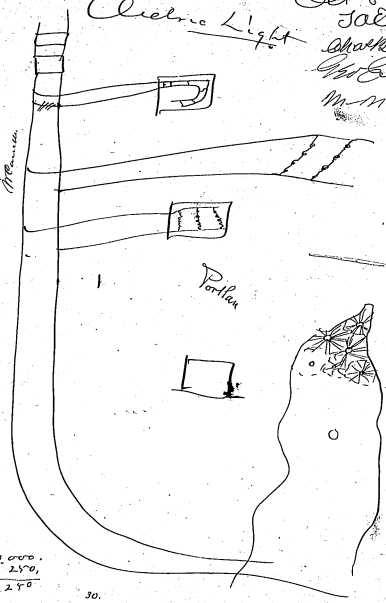


Copies on page 198 Vol 1 with Researches Oct 14, 1878
Wm. Conner

Electric Light

115
Oct 8 1878
Jas
Charleston
W. E. Cannon
M. M. Jones

Revised on page 196 Vol. 1 Esch. Panama
Bar, 4, 178
Panama



240,000.
751 250,
10 31,250

96

36000
70068968968

1250 22
1/2

25000
25
5000
25

2500
25
25

114

114

Oct 8 1878

Electric Light

Circuit No. 4.

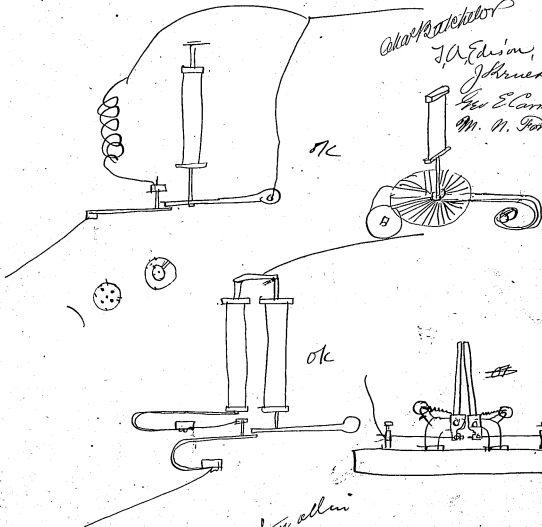
Edison

J. A. Edison

John

Ed. Corman

M. N. Poles



OK

OK

got them all in

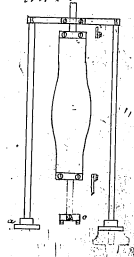
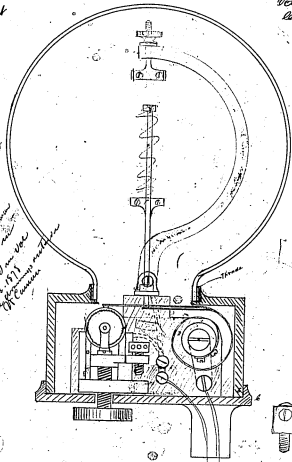
Copied on P 195 V 021 Ed. Corman
Oct 14 1878
Ed. Corman

115

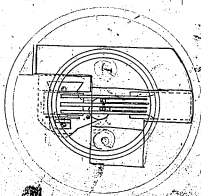
Electric Light

Copyed on Nov. 194 - U.S. 1 Edison
Pat. 1011
Also in Patent of Edison
Pat. 1011
Pat. 1011
Pat. 1011

118
Oct 9th 1878
Electric Light
J. Swanwick
Edison
M.M. Force



It is filled with carbon
& is fastened with copper
& platinum wires.



Circuit No 57

Excelsior Light
E L

119
Oct 9 1878

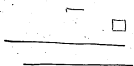
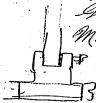
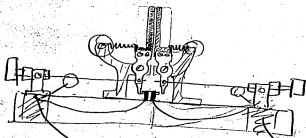
JAE

Adapted to
Geo Jackson Long

J. Kinckley

Geo E. Carman

M. A. Jones



Revised on Vol 1 - D. 201 Exc. Reservoir Oct 14 1878

J. Carman

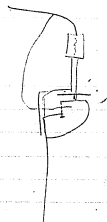
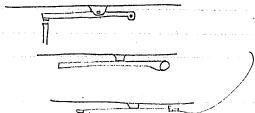
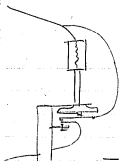
119

T. A. EDISON.

Electric Light 113

Menlo Park, N.J., Oct 9th 1878

Charles Batchelor
John Kewal
J. C. Cannon
Martin M. Fowler
T. A. E.



Personally appeared before me this day of
1878, the said Thos. A. Edison,
Chas. Batchelor, John Kewal, and Martin Fowler,
and acknowledged the above to be their signature

Notary Public.

Copied on page 193. Use 1 Ed. Research
Sept 12-1898
M. Cannon

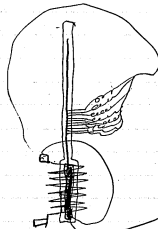
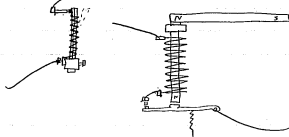
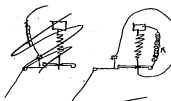
120

T. A. EDISON.

Electric Light 113

Menlo Park, N. J., Oct 9th 1878

Charles Batchelor
John Kewal
J. C. Cannon
M. M. Fowler
T. A. E.



Personally appeared before me this day of
1878, the said Thos. A. Edison,
Chas. Batchelor, John Kewal, and Martin Fowler,
and acknowledged the above to be their signature

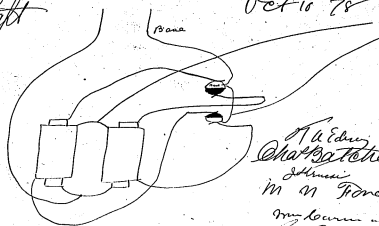
Notary Public.

Copied on Page 193. Vol 1
Ed. Research. Dec 12. 98
M. Cannon

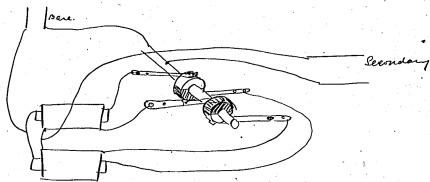
121

Electric Light

Oct 10 78



*Atk Edw
Charles Atketer
J. H. H. H.
M. M. H. H.
M. H. H. H.
J. H. H. H.*



Oct 10 78

T. A. Edison

M. M. Force

The idea is to ascertain if we do not get ~~an~~ ^{any} ~~of~~ ^{of} ~~the~~ ^{the} ~~light~~ ^{light} ~~by~~ ^{by} ~~increased~~ ^{increased} ~~surface~~ ^{surface} ~~without~~ ^{without} ~~alteration~~ ^{alteration} ~~of~~ ^{of} ~~resistance~~ ^{resistance}. Also to ascertain if the radiation nullifies the effect of increased surface.

Chas. B. Davenport

- (3) Make 2 lamps without regulators same as those with $\frac{1}{2}$ in. foil, very thin, one coiled in cylindrical form and the other straight the edges of cylinder not lapping but butted with smallest crack possible.
- (4) Piece of Platina $\frac{1}{4}$ in wide to fit double pillar machine rolled if possible $\frac{1}{1000}$ inch thick and set in machine.
- (5) On one of the old style lamp regulators I want a platinum point on lever $\frac{1}{2}$ long and on the screw a brass cup containing Mercury in which I place two or three drops of Glycerine.
- (6) Make with one of the machines made with $\frac{1}{2}$ in. foil very thin arranged with a standard candle to see the p.c. of loss with thick and thin tubes of glass over it, the idea being that while

OCT 10 1878 J. A. Edison, M. M. Force
glass does not obstruct light in the same
ratio as radiant heat hence there ^{is} may be
a gain in amount of light by employing ^{the same}
thicker bulbs ~~etc~~ ^{Wm. C. Brown}

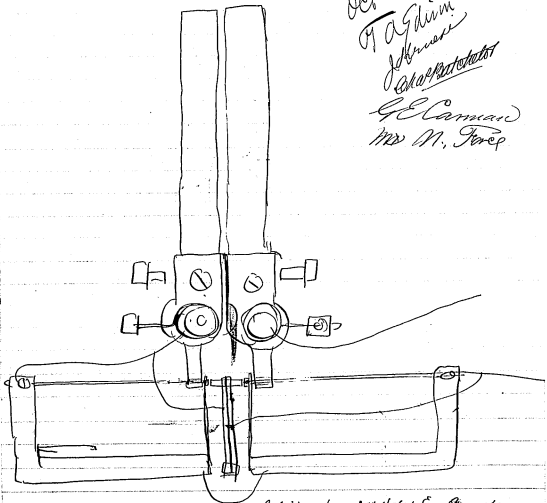
- "" *Wm. C. Brown*
- (1) Arrange on a vertical revolving shaft at
300 per min. a lamp one of old type spiral
with regulator securely clamped to the shaft with
two heavy rings & ^{heavy} connection springs for conveying
the current to lamp; idea being to increase
quantity of light & diminishing its intensity
the spiral must describe a 2nd circle.

Make two induction coils of No 3 primary
~~and~~ 2 layers; and No 8 secondary 8 layers
Cores 3 inch diameter 12 inch long cast
iron also cast iron backs placed on bases
with bindposts for heavy wires —

1280

Electric light
Oct 12 1878

W. A. Gilman
Johnston
~~Edwards~~
G. C. Carran
Mrs M. Forep



Revised on page 201 Vol 1 Exp. 1878
Rev. 74. 1878
G. C. Carran

128

Electric Light Co. 14. 1898

J.A. Edman

Charleston

Geo. C. Corman

M. M. Ford

$\frac{14}{32}$
16.



$\frac{3}{8}$
3/4



$\frac{5}{8}$



1/2
3/8
y

18.
18

width
 $\frac{1}{16}$ 1/2
 $\frac{3}{16}$ $\frac{3}{16}$ $\frac{1}{16}$

2 hp.
4 hp.

250 hp.

$\frac{1}{8}$

250.

250 sheets	$\frac{1}{8}$ wide	18 inch long	total 250 hp.
500 "	$\frac{1}{8}$	9 "	250 hp
1000 "	$\frac{1}{8}$	4 $\frac{1}{2}$ "	"
2000 "	"	2 $\frac{1}{4}$ "	"

250. / 2000 (

8

20,

Order of 1000 lbs of 1898
Rumney Co. 14. 1898
J.A. Edman

Muesi,

11th 1945

I want an adjustment on top of the 'bridge' + draw up the plate 20.



Also I should like to have some lighter way of holding the ends of the platinum instead of the brass clamps with two screws thus:-
 say a piece of brass in shape of a T + drilled as shown
 & then clamped down on to the platinum



All the 4 springs must be fastened together & I have them here at the bottom of the rod so that they go together

These alterations will complete this and I shall alter the others somewhat but that will not make any difference to outside contour of which I would get 6 sets

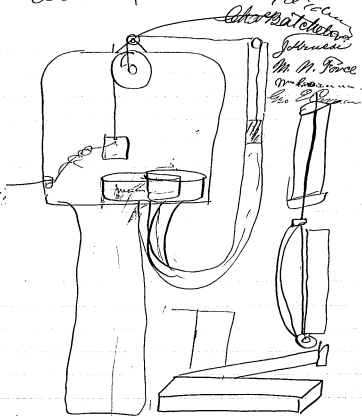
B

T. A. EDISON.

Menlo Park, N. J.,

Oct 15 1878

Electric Light

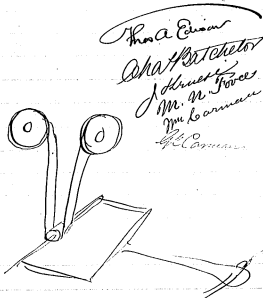


131

T. A. EDISON.

Menlo Park, N. J.,

Oct 19 1878



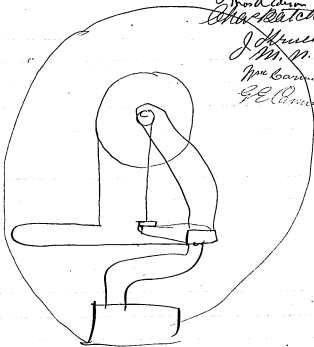
132

T. A. EDISON.

Menlo Park, N. J.,

Oct 10 1878

Wm. Edison
Chas. Batchelor
J. Husk
Mr. M. Force
Mr. Conner
G. E. Brown

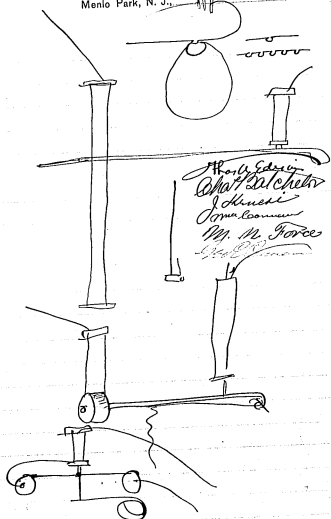


133

T. A. EDISON.

Menlo Park, N. J.,

Oct 10 1878



Wm. Edison
Chas. Batchelor
J. Husk
Mr. M. Force
Mr. Conner
G. E. Brown

134

Electric Light
Sub Div.

Oct 16th 1878

J. H. Mason

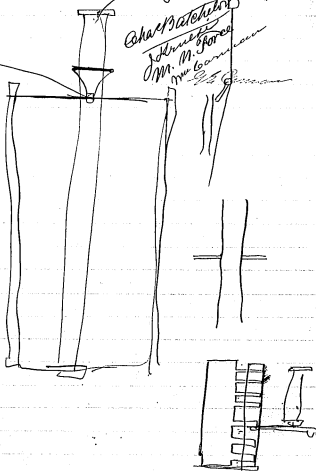
W. H. Mason
Chas. B. Ketchum
M. W. Force
J. W. Leonard
Edw. E. Conner

EDISON.

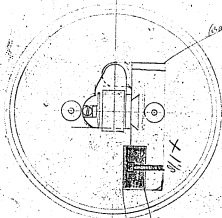
Menlo Park, N. J.

Oct 15 1878

J. H. Mason
Chas. B. Ketchum
M. W. Force
J. W. Leonard
Edw. E. Conner



135

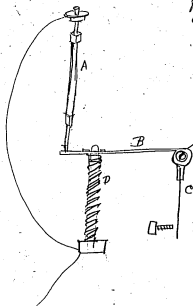


136

Electric Light

Oct. 17 1878.

Experiment



A is platina foil as we use it fastened to lever B
C is a spring which gives the requisite amount of flexibility to B.

D is a platina spiral wound close together and with a loose core of fibre. This spiral is closed so as to short circuit by the expansion striking down the lever B.

Spiral D ought to be 2 inch long and made of about 26 or 28 platina wire.

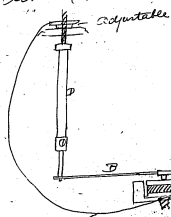
Chas. Batchelor

Johnston
Mr. W. Ford
Thos. A. Edison
New York
Edison

Electric Light

Oct 14th 1848/186

Musei
Make an experimental instrument
like sketch

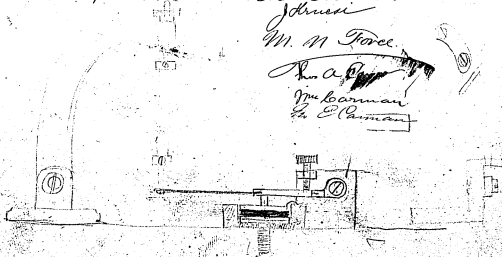


The lever A is fastened by a shoulder
screw + has on its end a spring
B the lever is kept down on the
button by screw C and
when set the pri
D lift the spring
sufficiently to take
the pressure of the
button and as it
expands it allows

more pressure on again. Make lever
A quite thin so that it will be slightly
springy

Sho. catches
John
W. M. Force

~~W. M. Force~~
J. M. Force
to C. L. Luman



Electric Light

Oct 14 1878

Experiment Ohm's Law

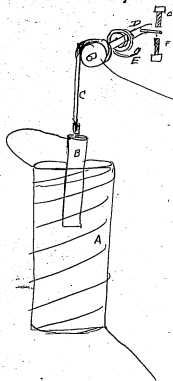
McCormack ^{W. H. Force}
A is a single layer coil of
No 12 wire about 24" long and
hole about 1/8"

B is a core hung on platinum
foil C which coils up on a
wheel on shaft

F is a spring which balances
the weight B

The shaft has two stop points
F + G

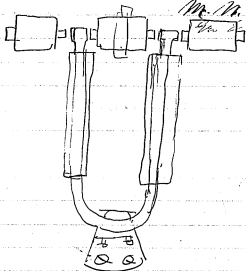
When current comes in B
or near middle of coil,
When platinum heat its resistance
is higher & the magnet let



Wait on this

11
Menlo Park, N. J., _____ 187

Edison Exp. Oct 14, 1879
W. Edison
Chas. Satchels
J. H. Mason
M. M. Force
Wm. Conner
Wm. S. Conner



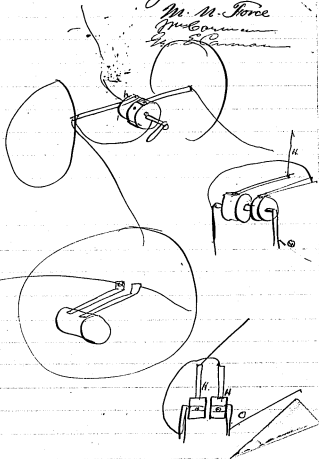
140

T. A. EDISON.

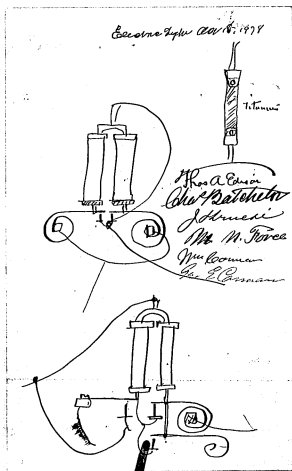
Edison Exp. Oct 15, 1879

Menlo Park, N. J., _____ 187

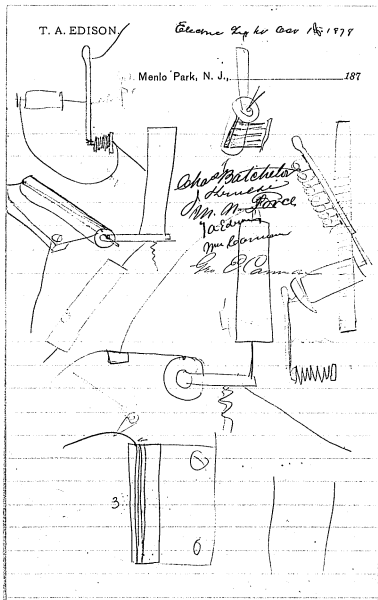
Thos. Edison
Chas. Satchels
J. H. Mason
M. M. Force
Wm. Conner
Wm. S. Conner



141



143

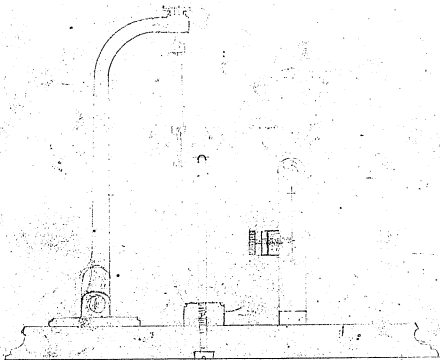


144

Single Light

Oct 18

A. A. Edison
G. E. Carman
4th St. Ford
Chaparral
New York
Am. E. Co.

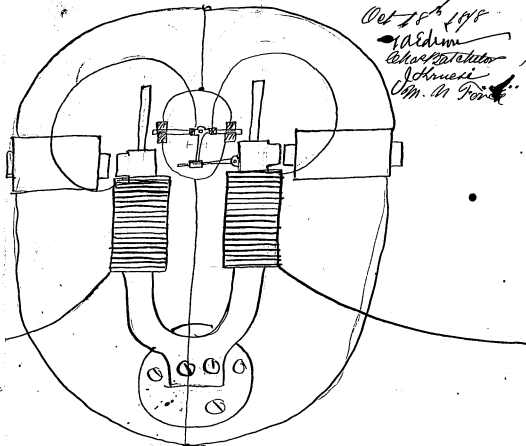


145

Electric Light 123

Oct 25th 1878

Edison
Charles F. Brush
Schuessl
Wm. M. Goetz



Edison's Magnet Electric Generator

Copied on P. 202 Vol 1 Est Records 6049.21

McCannan

Electric Light.

Oct 20 1878

122d Ave

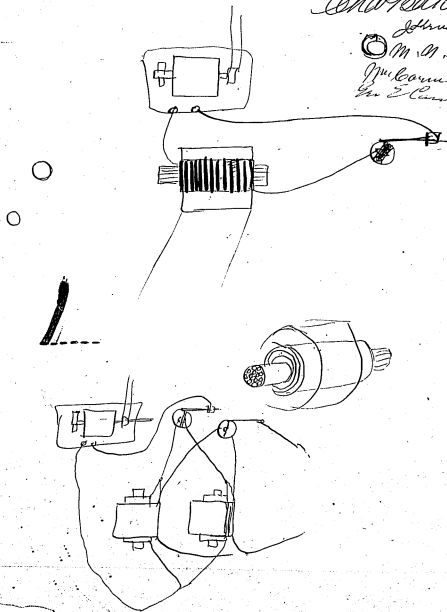
Chas. Ketchum

Johns

M. M. Force

M. C. Cannon

St. Louis



147

Electric Light.

Oct 20 1898

Mr. C. W. Mason

711 Edison

Charleston

M. N. F. Jones

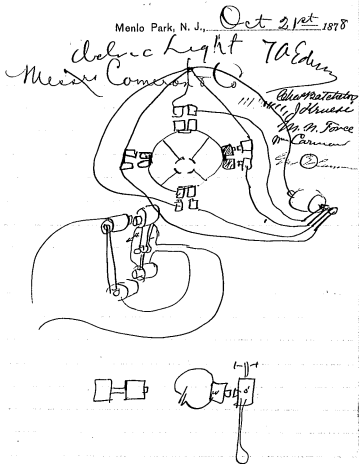
St. Louis

I propose to use two or more induction coils arranged with commutators on a small quantity magneto machine; this commutator throws the current from the magnets first into one primary & thence to the others, without breaking the continuity of the magnets circuit. The same commutator also throws the secondary circuit of a main wave generator in series with the ~~the~~ taking off of the primary & so on; I hope by this means to get a current which may be opened and closed without interfering with the magneto machine, also to conveniently obtain any tension required, and to prevent loss of power by dispensing with a great amount of dead magnet wire, weight etc on a magneto machine.

T. A. EDISON.

77

Menlo Park, N. J., Oct 21st 1878

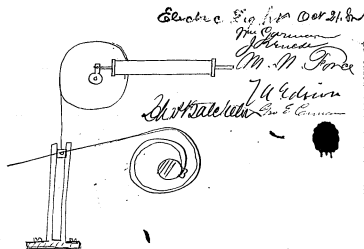


149

T. A. EDISON.

Menlo Park, N. J.,

187



150

T. A. EDISON.

Menlo Park, N. J.,

1878

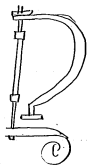
Kruesi



T. A. Edison
J. Kruesi
S. C. Cameron
M. N. Force
McCormick
Edison

Make the spring in the new lamp
like this Z to the 4 springs and
X is a piece of spring as wide as
all 4 springs fast at Y.

Also make only one upright
instead of 2. this way



Also make the
platinum strip as
long that it will
come central in
the glass globe

Patchell
Oct 31 1878

151

T. A. EDISON.

Menlo Park, N. J.,

1878

Electric Light

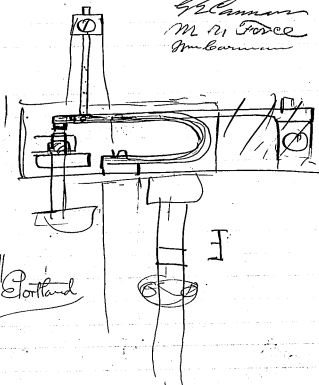
J. Kruesi

S. C. Cameron

T. A. Edison

M. N. Force

McCormick

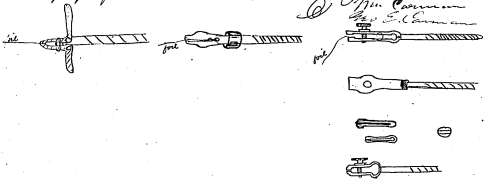


Portland

152

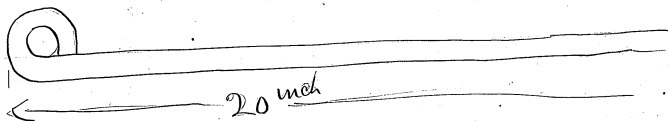
Electric Light

Clamp for foil:



Oct 22nd 1848
7a Essex
Chattanooga

M. M. Force
Johnston
Mr. Cannon
Mr. S. Cannon



153
9/16

153

50. 'Light' Experiments to be tried

Oct 22 1895.

1. Arrange a piece of Platina $\frac{1}{2}$ inch wide and very thin $\frac{1}{5000}$ in the glass bulb with proper apparatus for large wire that we may try the effects of a partial or whole vacuum on radiation from the spiral.
—————
2. Make 2 platinum strips $\frac{1}{2}$ inch wide ~~and~~ the other $\frac{1}{2}$ inch wide both same length and having same resistance on Bradley strap it with large Condit + Hanson cell. One foil being twice as thin as other. Arrange the four Condit + Hanson cell to heat either to redness but not to incandescence. These foils to be without regulators and arranged so that glass tubes can be placed over them which tubes are air tight at top and ground on bottom so that there is no leakage of air good solid connections required.

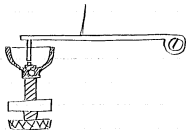
The idea of No 2 " is to ascertain if we do not gain increased light by increased surface without alteration of resistance and also, to ascertain if the radiation nullifies the effect of increased surface.
—————

3. Make 2 lamps without regulators same as above with $\frac{1}{2}$ inch foils, very thin, one coiled in cylindrical form and the other straight the edges of cylinder not lapped but butted with smallest crack possible.

Oct 22 - 1898

- 4 Make a piece of Platina $\frac{1}{4}$ in wide to fit double pillar machine rolled if possible ~~over~~ inch thick and set in machine -

- 5 On one of the old style lamp regulators, we want a platina point on lever $\frac{3}{4}$ long and on the screw a cup containing mercury in which we place a few drops of lyceline -



- 6 With one of the machines made with $\frac{1}{8}$ inch foil very thin arranged with a standard candle to see the per centage of loss with thick and thin tubes of glass over it, the idea being that while glass does not obstruct light in the same ratio as radiant heat hence there may be a gain in amount of light by employing thicker bulbs

- 7 Arrange on a vertical revolving shaft at 300 per min a lamp one of old style spirals with regulator, securely clamped to the shaft with 2 rings with heavy connectors springs for conveying the current to lamp, the idea being to increase quantity of light and diminishing its

$$\frac{154}{16}$$

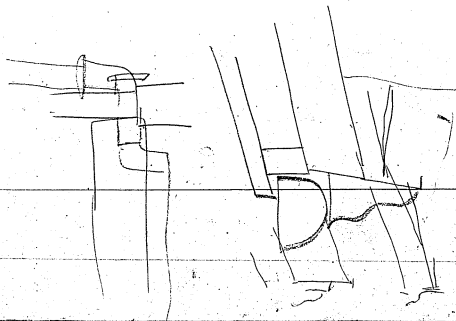
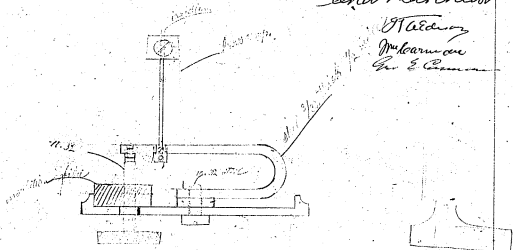
3. Apparently ^{great} ~~great~~ difference - coiled-one gives ~~more~~ ~~most~~ light, more noticeable on the little Noxon machine. The coiled-one measured .07 ohms and the fat one .11 ohms

~~51~~ MAR 3 1898
Chapman

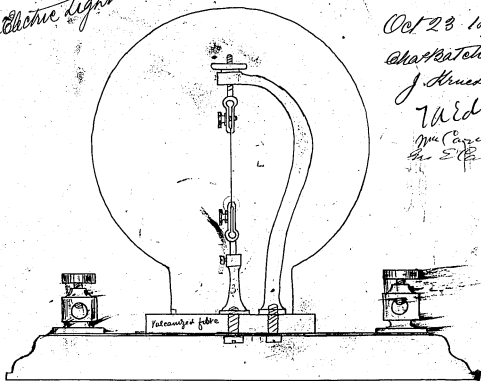
Electric Light Oct 22 1878

J. Thomson
M. M. Force
Carthage

Walling
M. M. Force
& Co



Electric Light



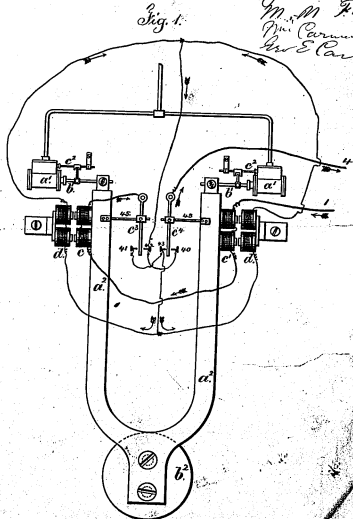
Oct 23 1878
Chas. Ratcheter
J. Kruesi
T. Edison
Mr. Cameron
New York

Kruesi Make me two instruments like drawn:
one to have platinum foil $\frac{1}{4}$ inch wide 1 inch long
the other to have " " $\frac{1}{8}$ inch wide 1 inch long
 $\frac{1}{4}$ inch wide to be twice as thin as $\frac{1}{8}$ inch
They must both test same resistance.
Glasses must be ground so that they will not let
air in when a little grease is on plate
Chas. Ratcheter

Kreusi Please make model for Patent of
Oct 25th 1878 Batcher

Also give me one of the
regular spiral lamps for
model.

W Edison
J Kreusi
M M Force
P M Carman
W E Carman



Oct 20 1876

A. A. Edison

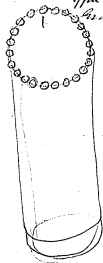
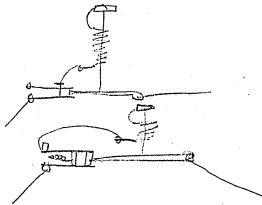
Johns

M. M. Pardee

A. A. Ketchitor

Mr. Edison

425 E. 11th St



159

Paper

Abel's Fuse.

Subsulphide Copper.
Phosphide Copper.

powdered & pressed in a press
very slow to heat.

the great the property of Oct 26 1878
phosphide Copper -
Res decreased as more sub sulphide used

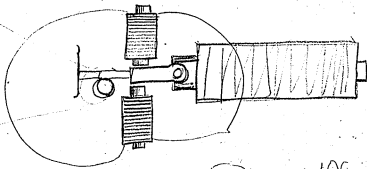
7A Edin.

Mrs Carrigan
M G Force
J. J. Johnson

50,000,

Portland
Portland
Portland

Portland

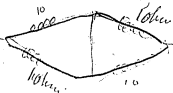
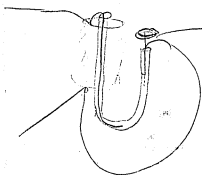
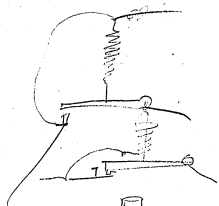


100
50
60
3,000

Electric
 Oct 20 1878

John M. Force
 Boston Boston
 Boston Boston
 Bellamy /

Shackleton
 M. Cannon
 G. E. Cannon



enlo Park, N. J., 187

ae

M M Force
 John M. Force
 Shackleton
 h. c. Oct 20 1878
 G. E. Cannon
 G. E. Cannon
 h. g.

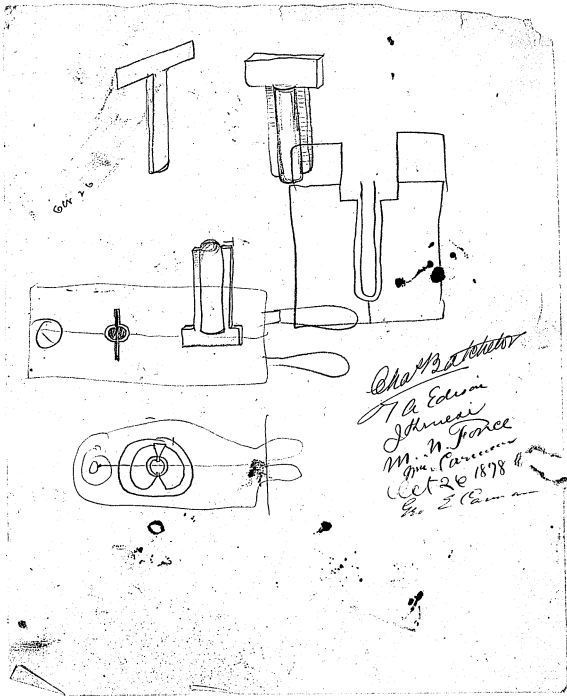
2005
 5/11
 00?

2 feet

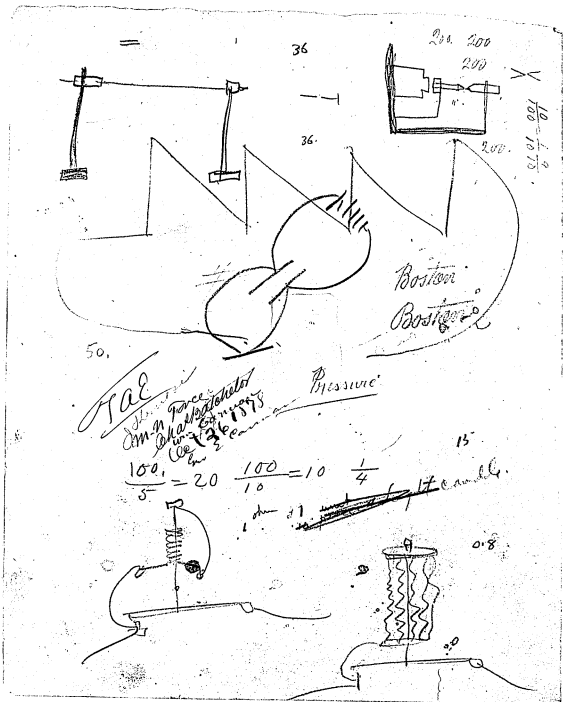
5
 5
 5
 5

162

163



Charles F. Johnson
T & Edison
Johnson
M. N. Force
Gen. Parsons
Oct 26 1898
No. 2 (Am.)



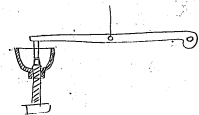
Electric Light

W. Wren

Oct 27 1898

Chas. Batchelor,
J. Wren
The Cambridge

Make on one of the old style regulators
on one of the ~~coils~~ a point $\frac{3}{4}$ of an inch long
and at the end of screw put a cup which will
hold a few drops of Glycerine as in this sketch



W. Wren

M. N. Force

Geo. E. Casman

Push along the two induction coils.

Make the bottom platinum holder lighter.

167

Electric Light
Wren

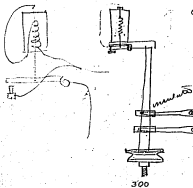
W. Wren

Oct 27 1898

J. Wren
The Cambridge
Chas. Batchelor

M. N. Force

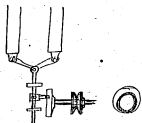
Please make an old Regulator Lamp
to revolve on a shaft 1 inch out of center
upright and carry connections to it
by springs (hoop) one (the top) collar
insulated & connected to regulator
lever



Put screw on table upright and
set running from shaft underneath

168

Electric Light

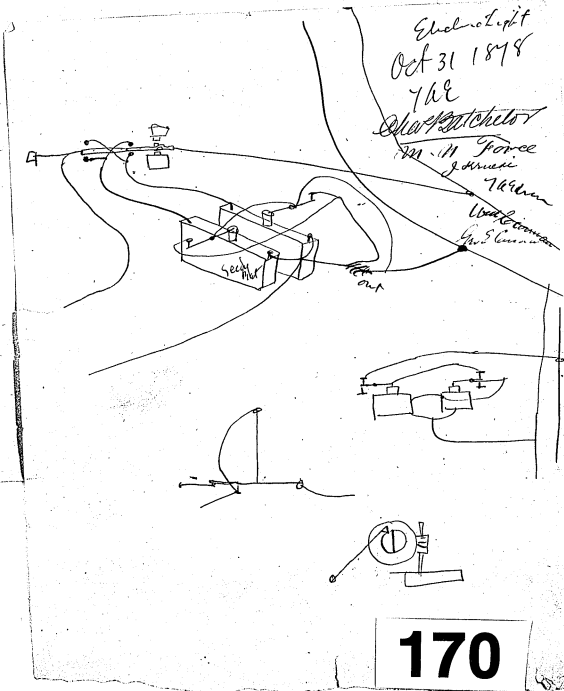


Oct 27 1878

Charlottesville

M. M. Force
 W. C. Garrison
 J. H. Smith

169

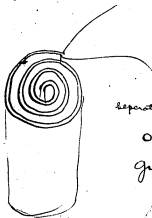


Electric Light
 Oct 31 1878

W. C.
 Charlville
 M. M. Force
 J. H. Smith
 W. C. Garrison
 W. S. Garrison

170

Electra Light No. 1 1878 7AE
 Batch get 4 large say 10 gallon Crocks.
 for secondary batteries.
 + get some sheet lead $1/16$ thick +
 foot or foot + $1/2$ wide wind thus



7AE

separate by solid soft rubber the size

o or strips $1/16$ thick of
 gum rubber cloth.

~~See Catalog~~

~~See Catalog~~

Try platinized Carbon see Watts
 on "Form & Structure"

See - page 762. under "Carbon"

Boron combines with platinum, try alloys
 of Boron + ~~Plat~~ Platinum, or Zirconium - Silicon + Plat
 the all the impossible metals one with the other

Boron unites easily with plat. See Watts Dic. of Boron
 page 629

Electric Light No 14-1828

J. H. ...

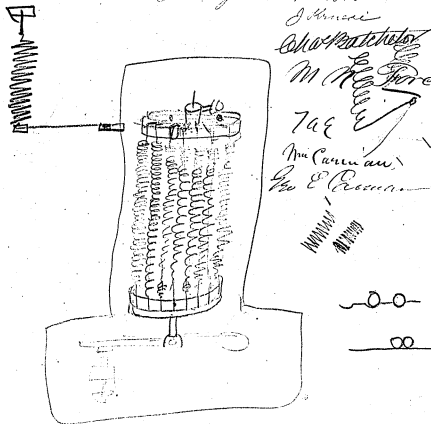
Edgar ...

M. R. ...

743

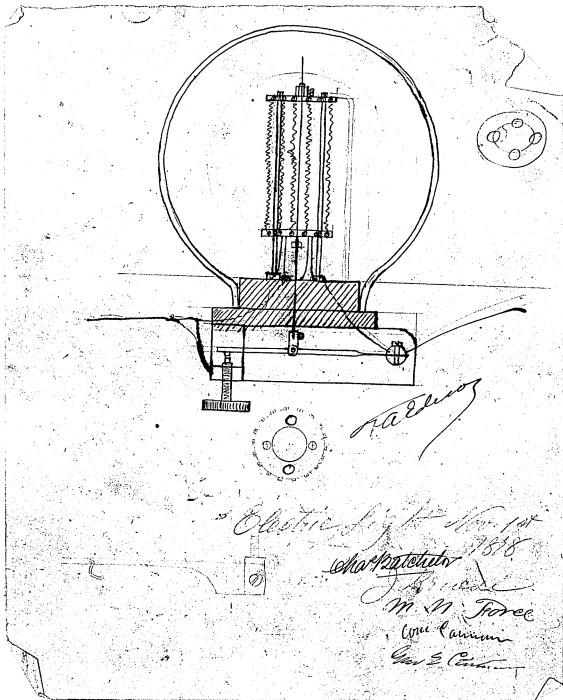
M. ...

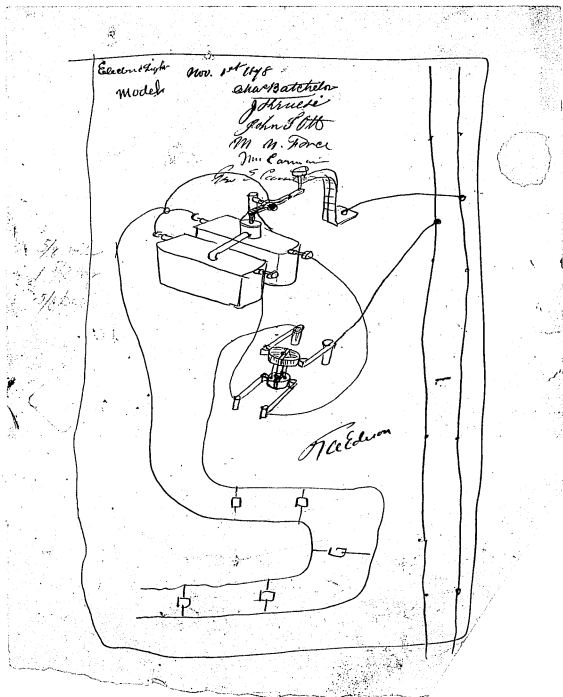
... & ...



Batch make drawing of this
20 spirals finest platinum wire. Twice the
length of those in the other lamp

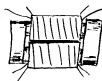






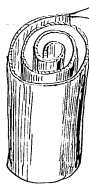
intensity. The spiral must describe a 2" circle

- 8. Make two induction coils of No 3 primary 2 layers; and No 8 secondary 8 layers. Cores 3 inch diameter 12 inch long cast iron also cast iron bolts placed in bases with bind posts for heavy wires. We decide to make this in this manner.



Cores with closed armatures at each end

- 9 Get 4 large 10 gall. crocks for secondary batteries + get some Sheet-lead 1/16 thick and 12 inch wide wound thus:-



Separated by solid soft rubber this size \circ of strips 1/16 thick of Gum rubber cloth.

- 10 Try platinised Carbon. See "Walt. dic" page 462 under "Carbon"

~~10/22~~ 1918 Nov 1st 1918

11 Boron combines with platinum
In alloys of Boron and Platinum, or
Iridium - Silicon or Platinum etc
all the infusible metals one with the other
Boron unites easily with platinum See
Watts' Dic. Boron page 629.

— " —

12 Its oxide of Ruthenium a conductor
if so it cannot be melted by the
Electric Arc.

13. Ek !!! Tungsten Alloy with iron!!!
Iron is the only metal which alloys
with Tungsten in all proportions up to
80 per cent of the latter with which pro-
portion a mass if formed not fusible
at any attainable temperature
p. 898 Watts Dic. Tungsten "Quid Vide".

— " —

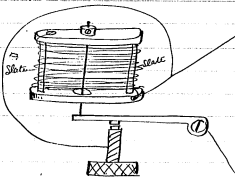
14 Get Tungsten Oxide, (ie) Wolframium
or wolfram ochre.

15 Platinum and Cadmium alloy.
100 parts of platinum at a red heat retain
117.3 parts Cadmium. The alloy is almost
pale white - very brittle, very fine grained
and refractory in the fire
vide Watts' Cadmium page 703.

58

Nov 1st 1918

16 =

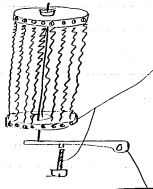


effect of radiation

Make an instrument
like this:-

Platina wire wrapped round
two pillars of slate and
regulator wire through middle
as in sketch the wire
in passing backwards and
forward come close to wire
& each other & take the

17 Make a spiral instrument as -
20 spirals of finest platina
wire two inches long put
as close together as possible



18.

Nov 1 1878 Electric Light

W. Edison

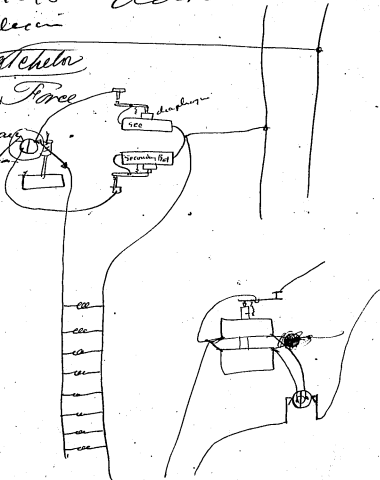
Chat/Batchelor

M. M. Force

J. H. Russell

M. C. Carver

W. S. L. ...



Electrolysis, Nov 2, 1878

Make a cylinder of Peroxide of Iron with
small percentage of platinum in it
and test for conductivity. N.C.

~~Design a battery with 6 flattened
platinum tubes in circle~~

Take sheet & bend it round & braze
use ~~oxy~~ Hydrogen flame & blow
pipe

Spiral tubing



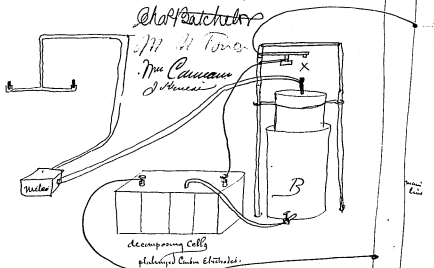
Chas. B. Hatch
M. N. Force
New London
Conn.

Nov 2 1878
T. Edison

Chap. Hatcher

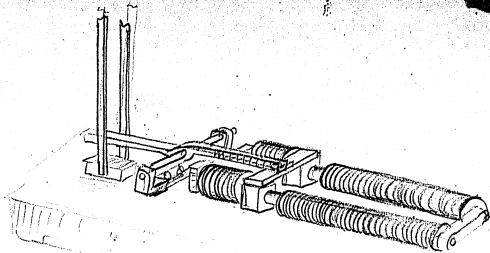
111 H. T. W. Co.

Mr. Cassan
J. M. W. Co.



When the gasometer is full the cylinder that rises
 lifts the lever at X from its Contact point and
 opens the circuit so that the gas is lit in the burner.
 The cylinder falls & closes the circuit and the
 current gives more gas. The gas burner may be
 either a fine capillary tube with the jet opening
 against lime Zinc oxide etc or it may pass
 through cylinder of that substance, or a plug of
 fused leaded imbedded in medium or platinum may
 be used if puncturing through that the
 medium helps to set it on fire by catalytic action.
 and at the same time the medium plug becomes
 unconductant, to prevent explosion the gas may
 pass through gauge of fine wire lead & regulated fully
 - [unclear]

This method I call lighting by
 Electrolysis =



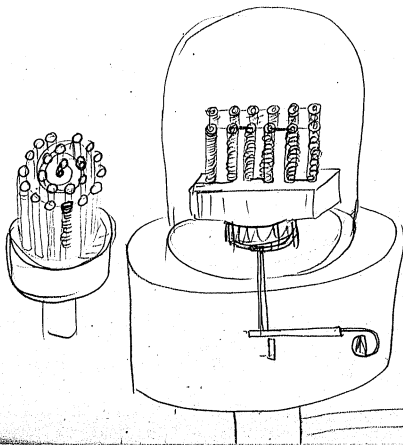
36 inch,
1/3

Nov 2 1878

TAE

Chas Batchelor
M N Force
Geo E. ...

182



Nov 2 1878

TAE

M N Force
Chas Batchelor
Geo E. ...

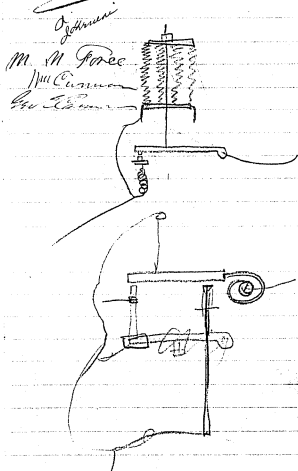
183

T. A. EDISON.

Menlo Park, N. J., Nov 2 1878

709

Char. Batcher



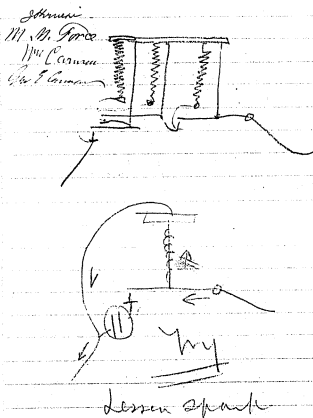
184

T. A. EDISON.

Menlo Park, N. J., Nov 2 1878

710

Char. Batcher



185

Magneto

Nov 2 1878

W. E. Swanwick

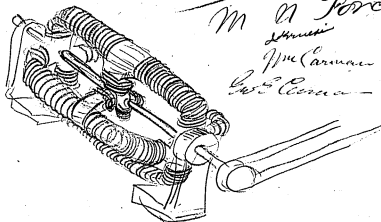
~~Chas. B. Swannick~~

M. H. Force

Swanwick

M. H. Force

Chas. B. Swannick

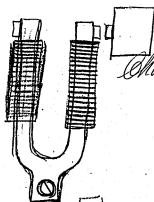


186

Electric Light. No 2 1878

Magneto -

769



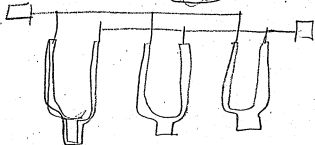
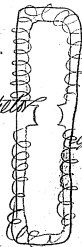
~~Chas. B. Swannick~~

M. H. Force

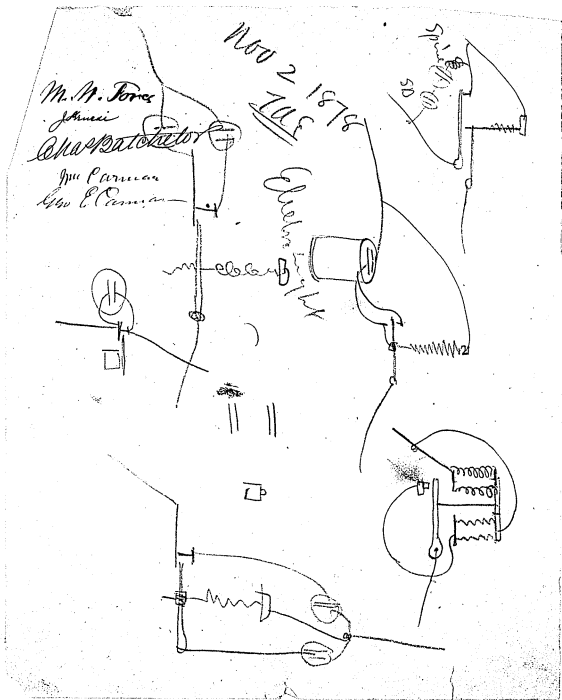
Swanwick

M. H. Force

Chas. B. Swannick



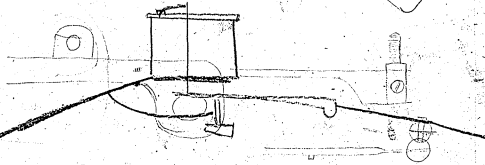
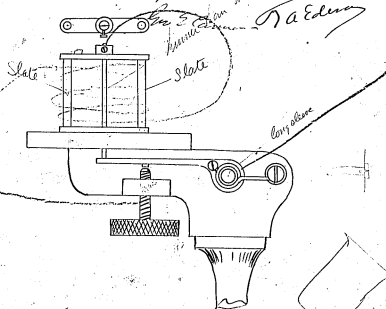
187



188

Electric Light of 1838

*W. P. Hatch
M. M. Force
J. M. Carver
Ed. A. Edison*



Electric Light No 30, 1888

Journal

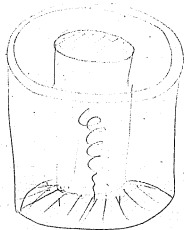
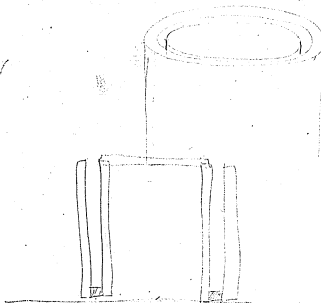
W. H. Preece

M. M. Force

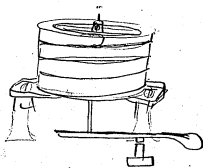
J. A. E.

W. H. Preece

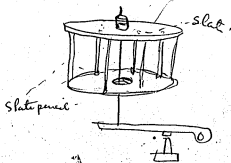
W. H. Preece



Electric Light Nov. 4th 1858
 Adams
 Charles F. Johnson
 Model patent office
 M. M. Force
 J. A. Edging
 Wm. C. Adams
 55 Corn



platinum foil $\frac{3}{16}$ inch wide wound around a
 slate drum then



Electric Light No. 477 1888
Chas. B. Schellor

17 Reels 1 1/2 Diam 48 Teeth.

M. M. Force

J. A. E.

Wm. Curran

J. S. Curran



Apr 4th 1918

Illinois

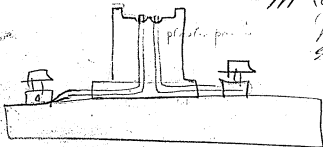
J.A. Edin

Chas. H. H. H.

M. H. Force

Wm. C. C. C.

85 Cannon



195

Nov 5th 1898

Chas. Batehator

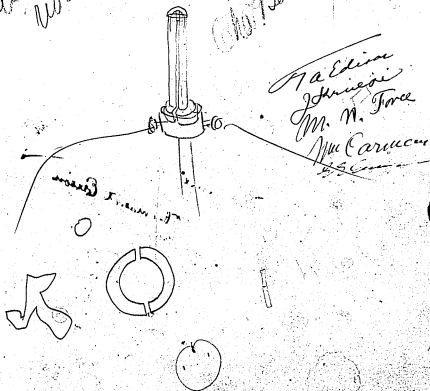
Edison took a piece platinum ^{wire} .003 thick and
 12 inches long measuring 3.23 ohms at 42° Fahr,
 he coiled it up fine 20x and afterwards
 made five turns of it in ∞ . With a large
 Condit and Hauman cell this was heated (and kept)
 to a little above red about 1000° Fahr. which was
 about 8.12 ohms

196

70 - 30.

Edison
Wilson - Lucas LampNov 5th 1898

Chas. Batehator



197

Electric Light No 577 1898

Johnston

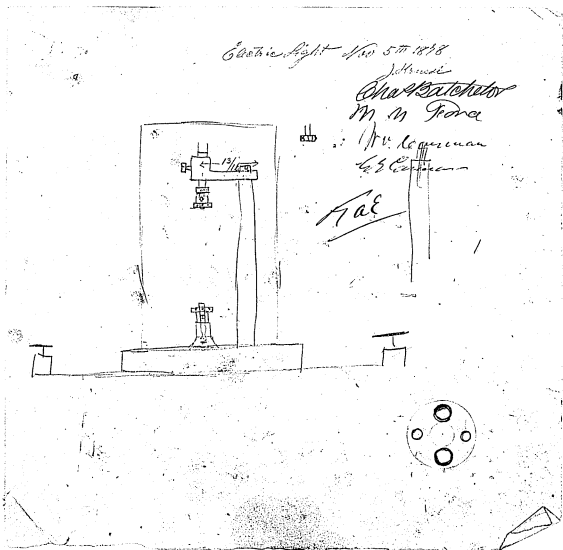
Charles Johnston

M. M. Ford

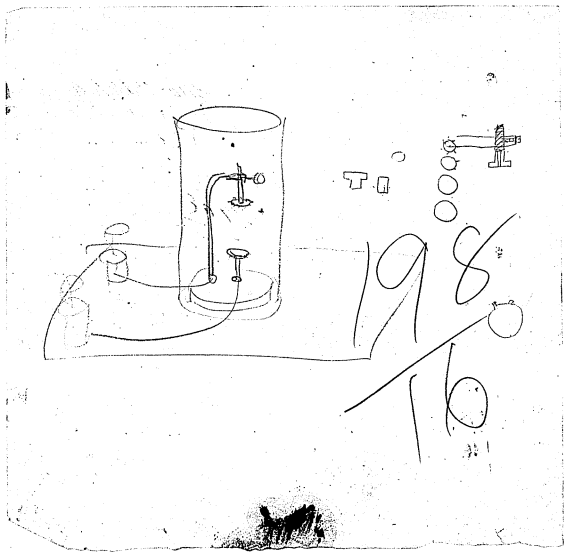
W. W. Leaman

W. W. Leaman

Pat



198

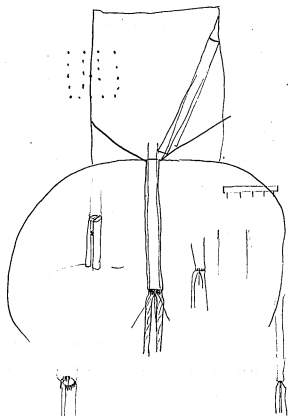


198

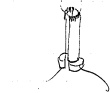
i . 40 .

2 1/2 20

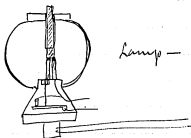
- 10



5-1848
Nov
W. H. H. H.
G. H. H. H.



Lamp



Lamp

Unequal Number of convolutions in given
spaces on the ring —

Unequal dividing of the sections,

Poor insulation,

Copper wire of poor conductivity,

Iron of poor magnetic conductivity,

Poor facilities for oiling

Poor facilities for taking care
of heat in machines to prevent
accumulation.

Non ~~ult~~ ultimate utilization of
heat from machines —

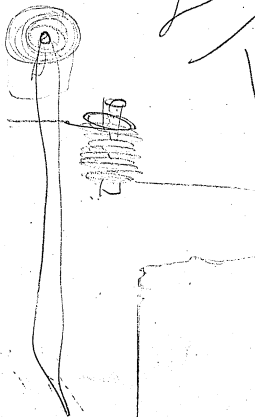
J. M. W. W. W.
M. M. F.

Nov. 6. 1876 To A Edison
New Method of ~~new~~ Electric Lighting
~~Chapman~~
Decompose water into Oxygen & Hydrogen, these gases
impure upon a platinum sponge or foil or
cylinder and are ignited by the catalytic
action of the platinum. This power may be
assisted by passing a current through
the platinum.

75.

Chapman

M M Forrester
New Haven
J. H. H. H.



201
16

201

These sheets given to
Clyde Apr 19, 1881
McGowan

202
16

202

Electric Light Nov. 4, 1898

6 spirals .003 = 1 spiral .008

$$2 = \sqrt{3.25^2 + 3.25^2} = \sqrt{10.56 + 10.56} = \sqrt{21.12} = 4.60 \text{ m}$$

$$4 = \sqrt{460^2 + 460^2} = \sqrt{2116 + 2116} = \sqrt{4232} = 6.50$$

$$6 = \sqrt{650^2 + 460^2} = \sqrt{4225 + 2116} = \sqrt{6341} = 7.90$$

nearly $\frac{8}{1000} =$

$\frac{1}{16}$

$\frac{1}{16}$ wave = how many 805

NAE

M. Coarman

M. J. Jones

J. Jones

$\frac{16}{1000}$
63

6 = 12



$$\sqrt{1225 + 1225} = \sqrt{150 + 150} = \sqrt{300}$$

$$= 17.32$$

$$\sqrt{73^2 + 173^2} = \sqrt{299.30 + 299.30} = 598.$$

$$\sqrt{2445^2 + 2445^2} = \sqrt{6000 + 6000} = \sqrt{12000}$$

$$6 = 12 \frac{1}{4}$$

$$12 = 17 \frac{3}{2}$$

$$24 = 24 \frac{4}{5}$$

$$48 = 33$$

$$96 = 42$$

$$192 = 51$$

$$384 = 60$$

6 squares of 3' = 1 square of 8'
try it

Electric Light

Nov 6, 1878

41.85 - 7.13
 42.42 7.35
 43.00 7.44

3' wire = 7.0686 area

$$\frac{42.4116}{6}$$

7.35 = 42.42
 8' wire = 50.2656

7 /

6 of 3 = X



7 1/2
 Jim Green
 4.24

2 = $\sqrt{3^2 + 3^2} = \sqrt{9+9} = \sqrt{18} =$

M. H. Fr
 J. H. H. H.
 1.6

4 $\sqrt{4.24^2 + 4.24^2} = \sqrt{17.97 + 17.97} = \sqrt{35.94}$

6 $\sqrt{6^2 + 4.24^2} = \sqrt{36 + 17.97} = \sqrt{53.97} \quad 7.34$

$$\begin{array}{r} .7854 \\ 4.7124 \end{array}$$

$$\begin{array}{r} .7854 \\ 31416 \end{array}$$

4.712

2.40

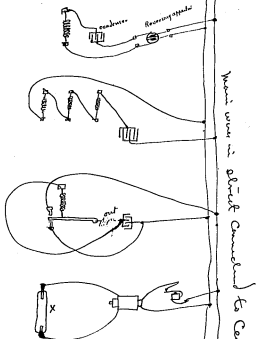
$\frac{1}{8} = 9/16 =$

$$\begin{array}{r} .612272 \\ .073632 \end{array}$$

$$\begin{array}{r} .125 \\ .000 \end{array}$$

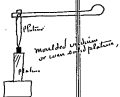
Experiment No. 6.

Nov 6. 1898



vacuum tube in direct connection to external circuit

X tube filled with smoke
 such as cadmium smoke
 jump spark in vacuum
 under smoke unobscured.
 a stick of finely divided cadmium
 mixed with large quantity of air
 condense may be used in tube
 + quantity jump spark caused



Chas. B. Ketchum
 Wm. S. Ketchum
 J. Ketchum

[Handwritten signature]

Electric Light

Nov 6 1878

1.95

T.A.S.

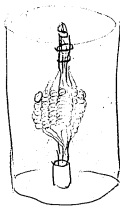
Portland

Portland

What matches

in in for

Mr. K. H. ...
J. H. ...

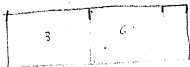


3/4 x 3/4



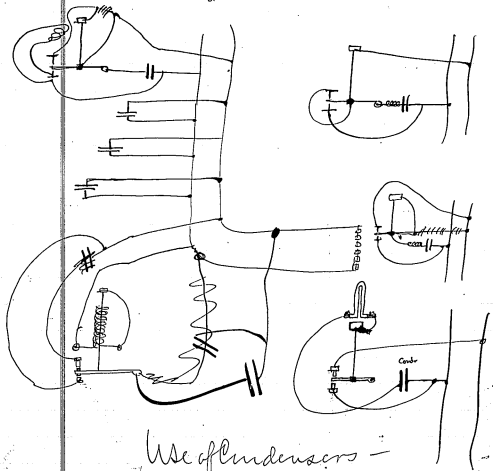
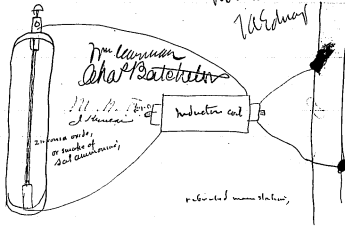
2 1/4

42



plating of ... dipped Portland
in nitrate of zinc
Linn. Magnesium Portland Portland
Etc. of Chromium
leaving the oxide to adhere
to & maintaining the plating
bunch a lot of ...

Nov 6 1898
W.R. Johnson



Use of Condensers -
for the working.

20

Principle.

Fig 7

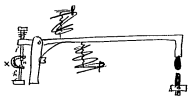
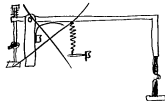
Nov 6 1878

7A Edison

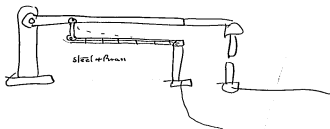
Charles Batchelor

M. J. P. P. P.

Wm. L. L. L.
J. H. H. H.



X marks
 is a small piece of metal
 which makes head of
 Not making good contact
 This heat is conducted to
 the side h. i. and so pack
 this separates the carbon electrodes
 and if the arc is broken the
 and i. h. carb's allow the
 carbon to touch again. It has a
 knife edge mechanism to
 adjust the heating of it.



Electric Light
by decomposition

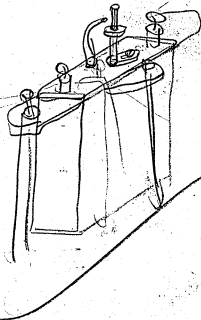
J. H. Edison

Nov 6 1878

Char. Hatchler

J. H. Edison
M. N. Force

M. C. Curran
Edison



Nov 6 1878

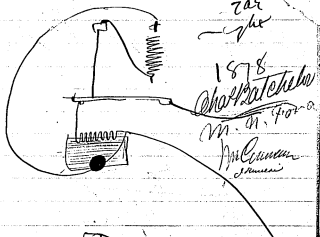
209
the

1878

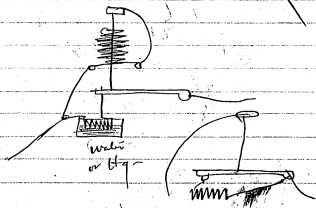
Char. Hatchler

M. N. Force

M. C. Curran
Edison



210



209

Water

Incandescent Candle

No. Co. 10/2

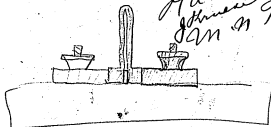
1500

$$\begin{array}{r}
 450 \\
 32 \\
 \hline
 960 \\
 1440 \\
 \hline
 2400 \\
 20 \\
 \hline
 480
 \end{array}$$

15362

32 7 3

Chas. Ketcher
 1111 Carman
 225 Carman 450
 475
 7 Alderson
 8
 1000 Force 3.600



4000

10.00 water

P

Pat. App. for Electric Light No 575,125

J. H. P. J. H. P.

M. M. Force

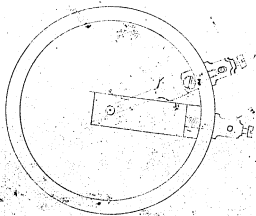
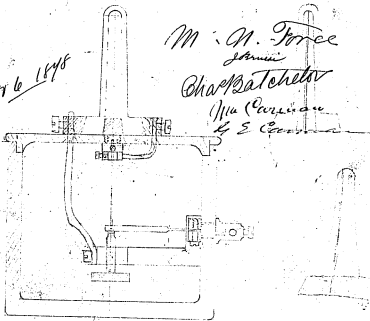
Attorney

Charlottesville

1/14/1885

U. S. Comm.

Nov 6 1898



212

Nov 6 1878

J. Edison

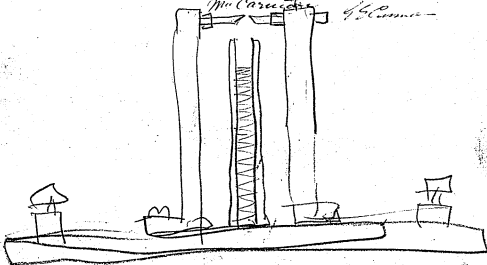
Electric Light & Heat

Charles Batchelor

M. N. Flower

~~M. N. Flower~~

W. C. C. C.



D. C. C.

213

7a Eden

M. N. Force

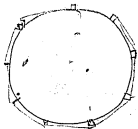
Johnson



Also the
New Carina
Chap. Patcher

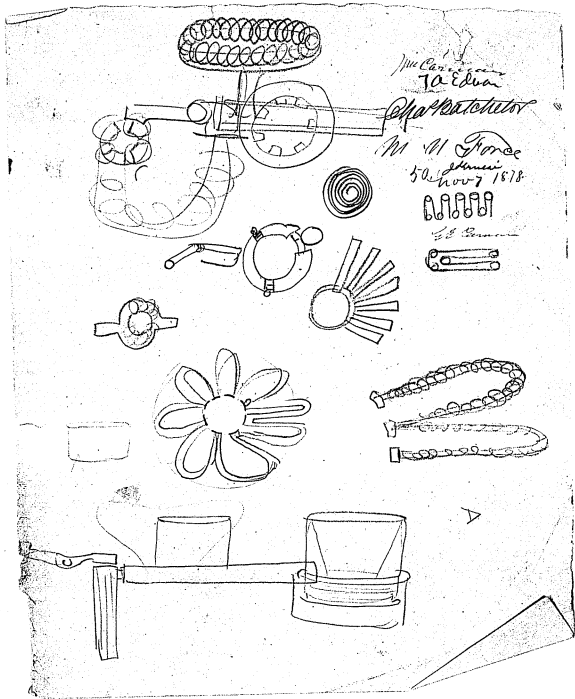
Nov 6 1878

45 Carina



2 inch diameter
state piece set in
polish silver ring
ring state nickel to
state prevent mistaking

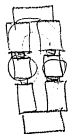
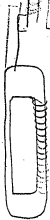
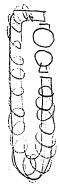
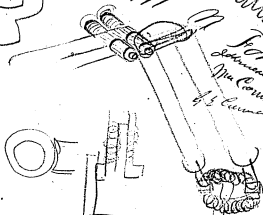
214



215

Magneto ^{from} ~~Nov~~ ^{Nov} 4/1918

Charles ~~Stetson~~ ^{W. Gibson}
Force
Lt. Colonel
of Cavalry



216

Electric Light No. 275 1858

Edison

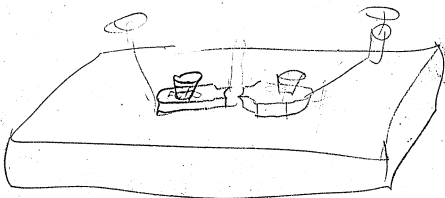
J. A. Edison

Chalkboard

M. M. Force

Wm. Parson

G. B. Cannon



Edison

217

Electric Light Nov 4th 1828

J. M. ...

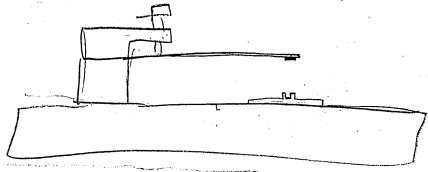
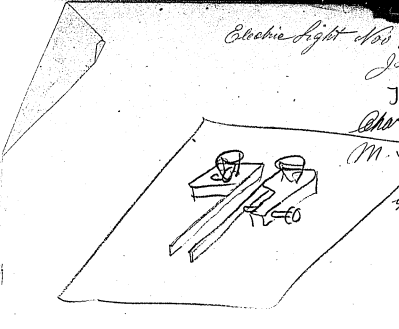
J. A. Edison

Chas. Spatchley

M. A. Force

Wm. C. ...

G. E. ...



50
48
47
~~46~~
all melt,
ores =
ditto,

These are manganese

Patent

82 ng.
94 ng.
45 ng.
54 ng.

Nov 8 1848

Chas. Spatchley
M. A. Force

Melted
J. M. ...
M. A. Force
W. C. ...

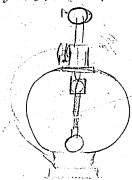
68. Niobium
Curious,

218

219

W. C. ...

Water lamp No. 1 - Nov 9th 1876



parton sticks 1/8 thick

Chas. B. Chetron

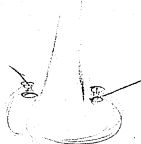
J. H. Force

M. M. Force

M. C. Curran

J. E. Curran

Force



221

T. A. EDISON.

Menlo Park, N. J., Nov 9th 1876

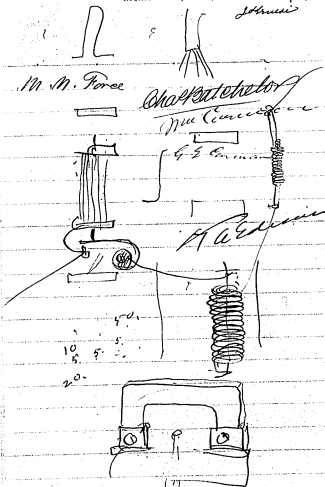
M. M. Force

Chas. B. Chetron

M. C. Curran

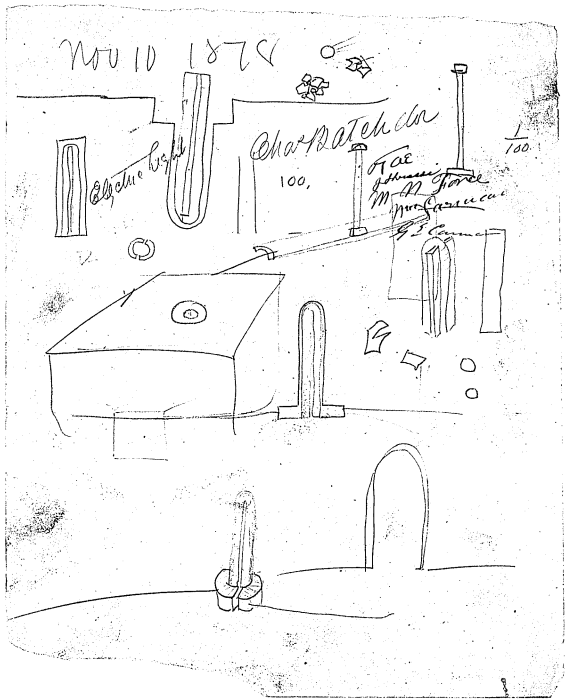
J. E. Curran

H. A. Edison



10
5
5
20

220



222

4 wires 100 inches in length for 3 h.p.
 if you coil these up in $\frac{1}{16}$ dia spiral,
 which makes 25 inches of spiral
 of it takes 4 inches to a lamp
 it will give $6\frac{1}{4}$ lamps & which, $2\frac{1}{8}$
 lamp per h.p.

Electric Light

Malden
 Nov 10 1878

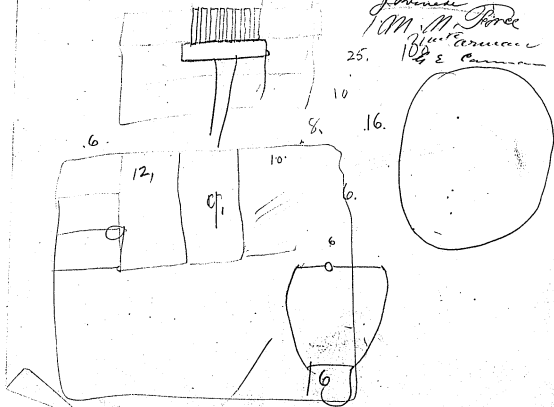
Charlottesville

J. H. ...

M. M. ...

31st ...

25. 10 & ...



Electric Light

Carbons by Heat & Pressure Nov 10 1898

Charcoal sticks

Produced bituminous coal pressed ^{with heat} while hot, before
gives good conductor

M. M. Farrel
The Carbon
Co. Conn. -
N. C.

Produced bituminous coal & Sugar

Lump black and sugar first heat & pressure
seems to have no conductivity

Afterwards heated in crucible it is
a good conductor.

heated again in Carbon dust
Excellent conductor

Powd bit. coal burnt to coke - conductor
saturated with sugar & dried. ~~no better~~ non conductor
Powd. + put a mould with heat - good conductor
Baked with carbon dust excellent - hard

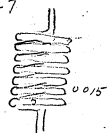
2.4
3.4

2.4 1 hp
5.8 1/2 "
~~5.4~~ 1.6 1/4 "



$\frac{51}{24}$
 $\frac{27}{27}$

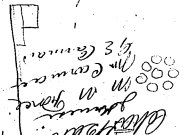
2.7



0.015 1/2 long



7 1/4, 1/2
10 2 2 1/2



3 1/2
The cement
on in
down

ohm
R
2.4 — 4 cells or 1 1/2
4.8 — 1/2
9.6 — 1/4
19.2 — 1/8

Basic length
Nov 10 1948
30

Electric Light

Nov 10 1898

highly
incandescent

Chart Batchelor

mesh of 36 wire per cell, when cooled $\frac{1}{16}$ diam
Johnson

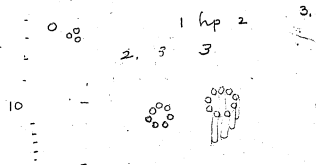
4 mesh mesh $\frac{1}{4}$ long.

Thos A Edison
M. J. Force
25 coils $\frac{1}{4}$ long $\frac{1}{16}$ diam
 $\frac{1}{2}$ long

2 series of
100 cells 100 inches

~~Series~~
12 coils $\frac{1}{2}$ long
6 coils 1 inch long
double series 6 coils 2 inches long.

3 lamps,



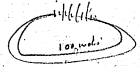
$\frac{1}{2}$ inch 4.

2

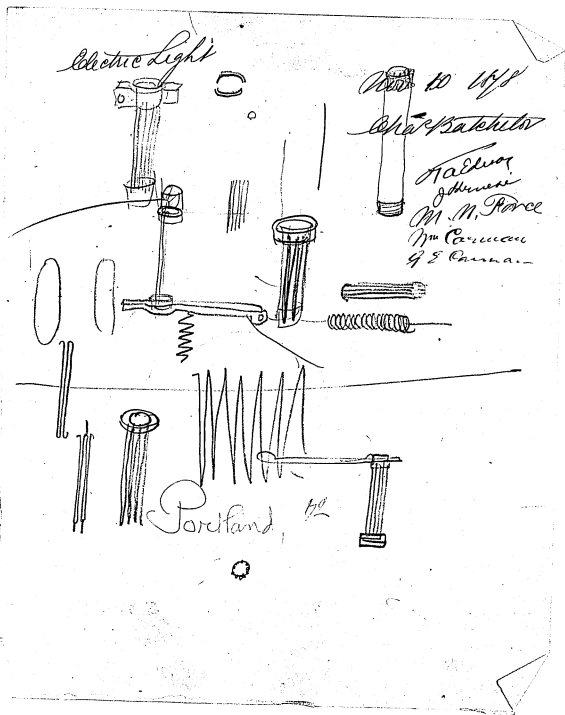


100 cells

25 $\frac{1}{2}$ inch spirals.



3



227

Nov 10 1938

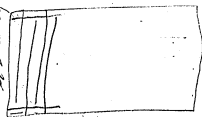
~~Chas. H. ...~~

The Commission

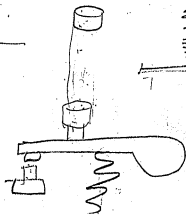
To Edward

W. M. ...

25 ...

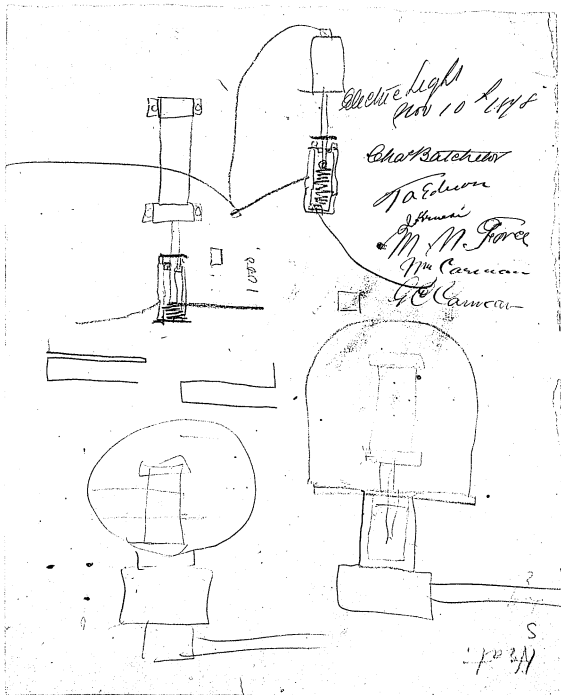


Electric light

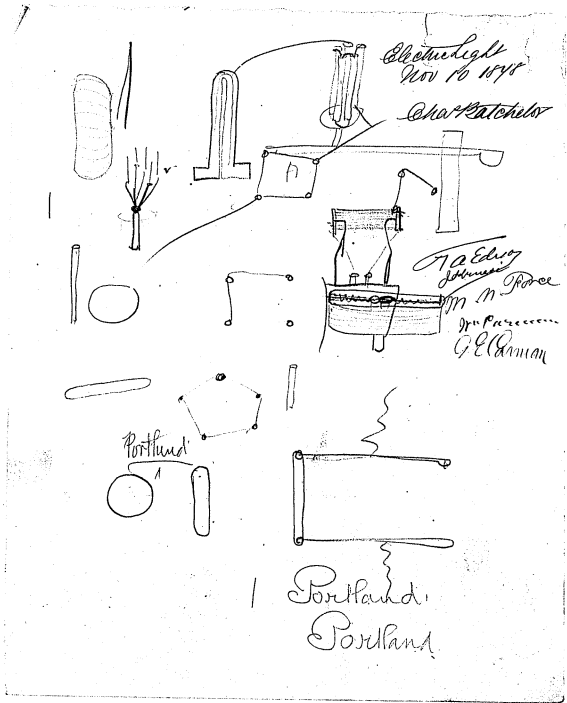


1 Partridge
Portocabello
Royalty
Regal

228



229



Electric Light

Nov 10 1898

6 wires $\frac{1}{8}$ diameter, add them together
as one wire what will be the diameter
of the large wire, =

~~Chart~~

17. of $\frac{5}{8}$ of inch.

17.	$\frac{3}{1000}$	3	
$\frac{5}{85}$		2	29,0000
$\frac{4}{4}$		1	29,000 29,000
			29,000
	$\frac{8}{32}$	$\frac{9}{36}$	
	$\frac{4}{16}$	18.	2 1/4.
	29,00 2		

Thos A Swan

Johnnie

M. W. Bunker

M. Carriere

W. J. Cannon

$\frac{5}{85}$

$\frac{4}{340}$

27,000.

$\frac{5}{170}$
 $\frac{21-2}{21-2}$

$\frac{1}{1000}$
333333

Electric Light

Nov 10 1878

Edison

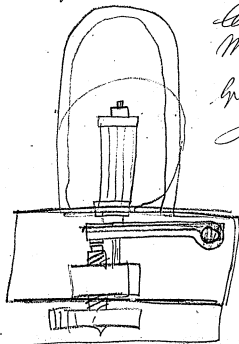
M. N. Force

Edison

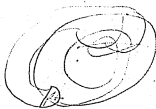
Thomas Edison

Edison

Edison



R.



232

Electric Light

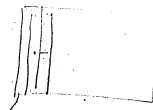
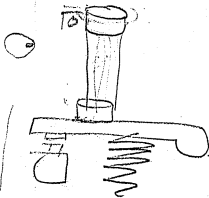
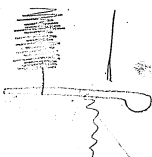
P
M. N. T. P.

Nov 10 1948

Chas. S. Ketcher

M. N. T. P.

T. A. S. P.
M. N. T. P.
H. P. S.



Portland

Portland
Portland

234

16. Barilo-Caleite. no. 9,

Strontium

17. Celestine

*Edwin
H. H. H. H.
M. M. M. M.
W. W. W. W.
M. M. M. M.
M. M. M. M.*

49. Prusgite, Blackox Wang

Utterly infusible in acid increase
tendency and 200 percent
works beautifully by in acids
Biggest Struck yet
Some pieces (impure) melt perhaps
because silica in it or a metal.

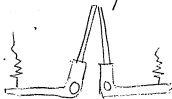
Make Inst
5 platinum points $\eta\eta\eta$ on a
cup holding pencil of Musnablu

Lamp for same

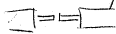
The Common
T a Edes on
Johns Force
M M
M M
Nov-10-1877



Lamp like this



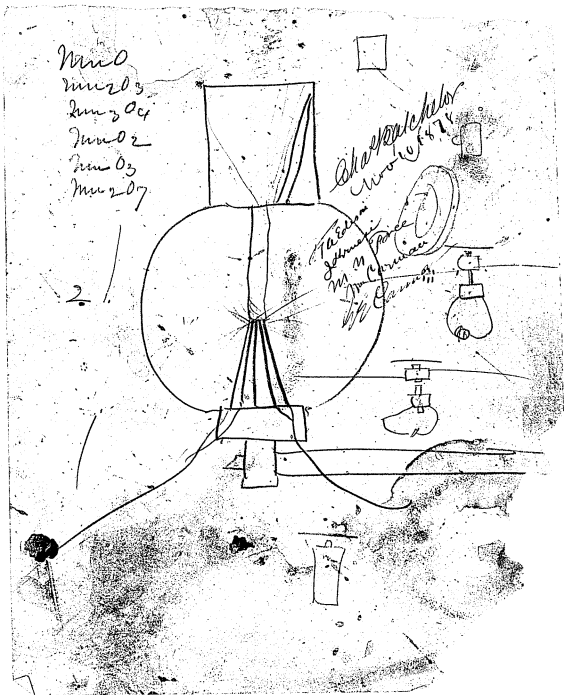
Make Inst for to adjust



236

Mu 0
mu 23
mu 204
mu 02
mu 03
mu 207

2/1



237

Palatinum

- 8. Oligo class melts into nice white glass
- 9 Natroite - N.Y. shales etc

TAE
 Lithium *gemmifera* *France*
 M. N. *Shaw* *1878*
 M. *France*
 J. *France*

- 10 Triphylline, *France*
 hot-shales etc greatly
- 11 Spodumine - non cond. *France*
 shales etc =
- 12 ~~Spodumine~~ *France*
 N.Y. non cond.
- 13 Lepidolite - non cond. N.Y.

~~14 Heavy Spar~~

Barium

- 14 Heavy Spar - non cond.
- 15 Witherite, conducts when very hot,
 boils.

No 1 ^{Suprim} K melts ^{volatiles} naturally allows arc to
 be longer —

No 2 Carnallite K. ^{as} ⁱⁿ ^{the} ^{presence} ^{of} ^{short} ^{arc} ^{length}
 detls — ^{no} ^{100%} ^{of} ^{the} ^{arc} ^{length}

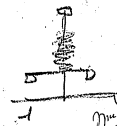
No 3 Alumite K. Don't melt so ^{the} ^{arc} ^{length}
 Shortens arc non cond — ^{the} ^{arc} ^{length}

No 4 Polyhalite K, melts easy
 non cond lengthens arc bl.

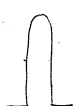
No. ~~Salt~~
 Rörhoclase (Palau)
 Rock salt, fuses to bond that applied —
 Panama — non cond —
 beads keeps white hot for 30 seconds.
 Shortens Arc —

~~Rörhoclase~~ Rock salt
 Melts naturally.
 Makes arc very much longer
 + much whiter

~~Rörhoclase~~ of Cynahite Shortens arc



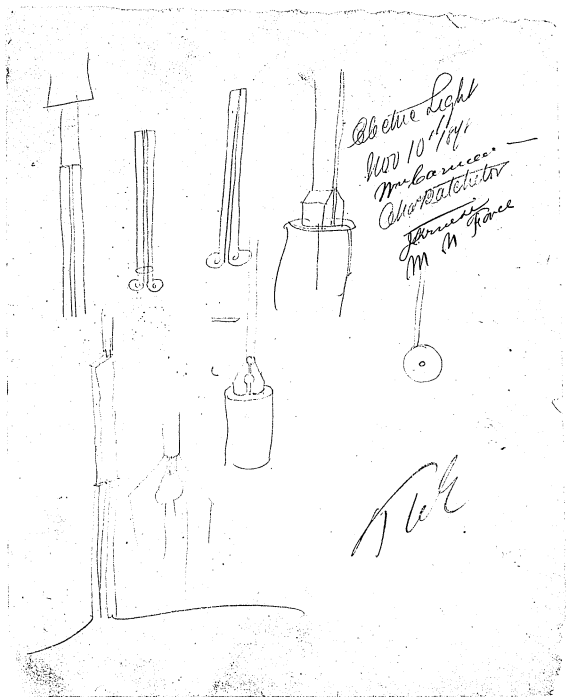
Mr. Cassman
A. E. Cassman
Johnnie Force
M. M.
Charles Ratcheto
Nov 10 1916
A. E. Cassman



Electric Light
99 - N. G. Van C...
Nov 10, 1916
Charles Ratcheto
71 Zincite - after
more is a 9000
but bases easily - its magnetic
Theory of Grav...

241

240



242

Electric Light

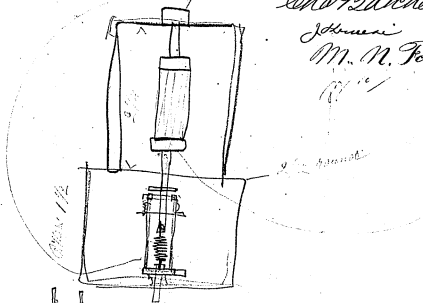
Nov 10 1878

Edo Batchelor

Johnston

M. N. Force

1878



1878

Edo

243

NO 49

Electric Light

Nov 10 1878

Edgar B. Ketchum

First piece, melts in 10 minutes
into a pasty mass

Second piece

Impossible to melt

Third piece - cannot melt

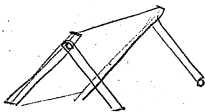
I notice that it wears entirely away
under the arc

W. C. C.

Johnnie

M. D. Force

Mr. Burman

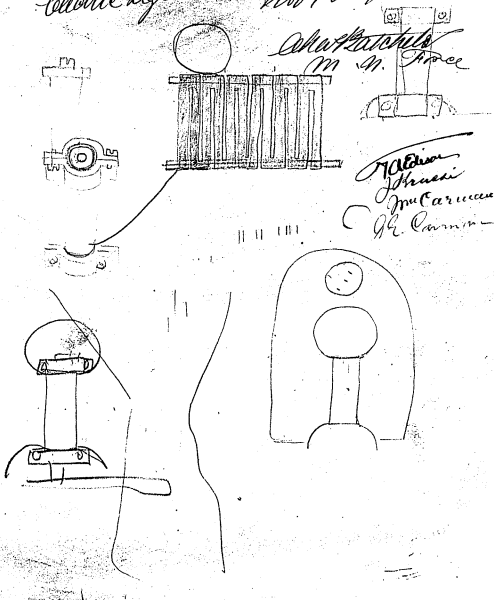


244

Electric Light

Nov 10 1898

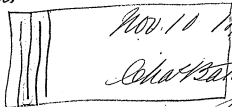
Ed. H. Hatch
M. M. Force



Ed. H. Hatch
M. M. Force
G. E. Carver

245

Electric Light



Nov. 10 1878

300
300

Edw. Satchell

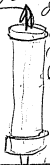
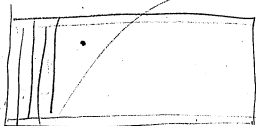
W. H. Johnson

Johnston

M. W. Force

Mr. Carman

Ed. Carman




Power
Fortwith

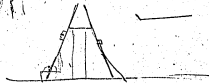
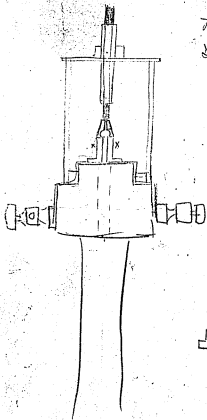
Mr. Thuesen

Nov 11, 1946
John C. Thuesen
2440 1st Ave
St. Paul, Minn.

Make an instrument

like this. xx are two pieces platina made in shape of a hollow cone. the carbon has a little bit on it as  which lays in the hole in platina and the rod is pressed down on platina, as carbon burns away the cones drop through.

Make more, bear to the platina than is shown in sketch.

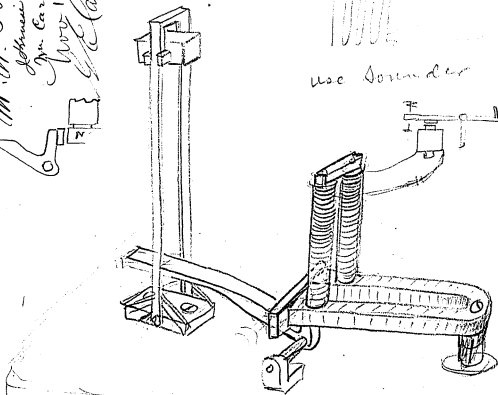


247

3rd Edition
Character
M. M. Morse
Johnnie
In Comm
Nov 11 1878
C. C. Cannon



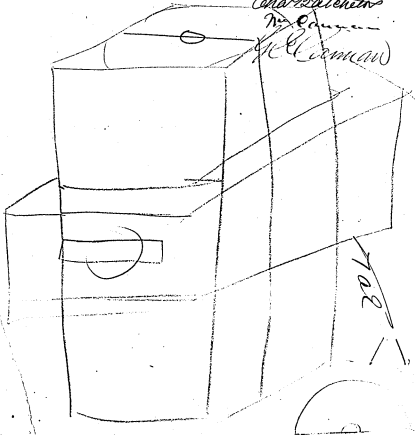
use sounder



248

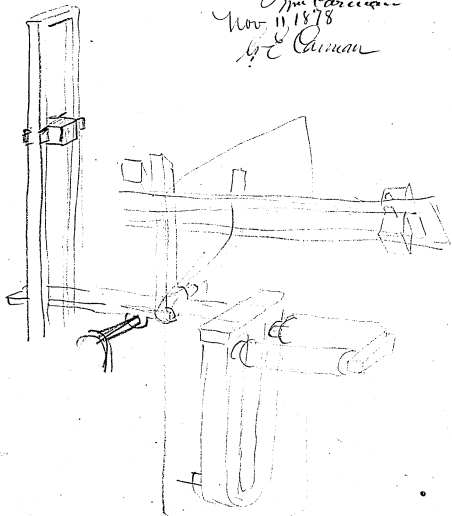
*Other model for beam type
12-12-1950*

*M. M. Free
Characteristics
No. 1000
H. C. Leman*

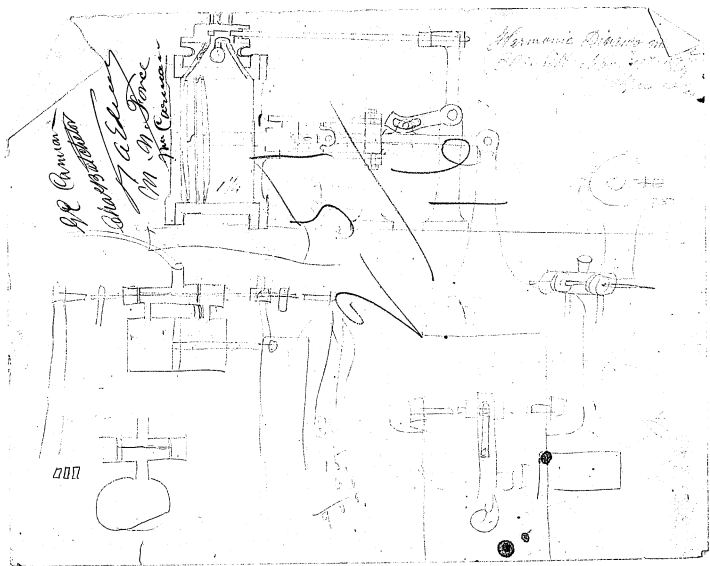


249

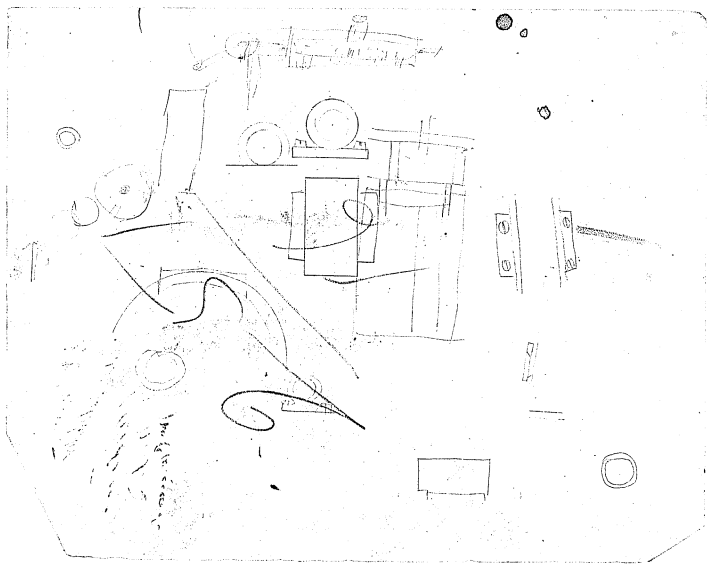
J. A. Edin!
Chas. H. Tuttle
M. M. Poole
Johnnie
Mr. Carver
Nov 11 1878
G. E. Carman



250



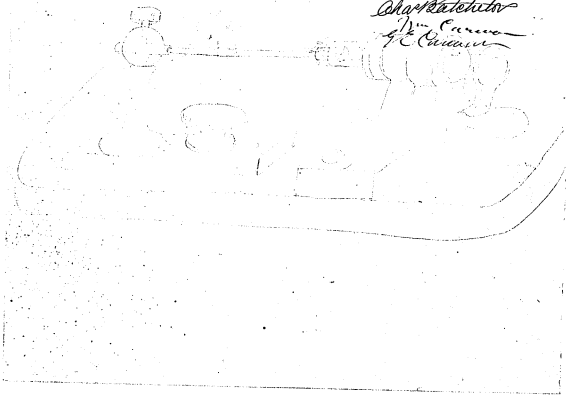
251



251

Report for mounting specimens of stone
the 11th 1888
J. H. ...

M. M. ...
M. M. ...
Characteristics
The ...
of ...



253

Resis Condn to Generators

JKK Mr 7001378

Knife $\frac{5}{10}$ Ohms

Copper $\frac{2}{10}$ Ohms

Chas. Satchel

J. E. Jones

M. N. Jones

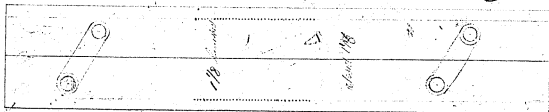
M. C. Jones

J. E. Jones

255

Electric Light No. 1378

Chas. Satchel
M. N. Jones
M. C.



Wire and Glass
with 70 Prof. in 2 1/2

M. C.

256

Electric Light
Carbons by pressure

Anthracite coal has 95 per cent carbon
try it for moulding

Nov 13 1898

Charcoalton

H. C. Ford

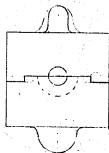
M. M. Forman

257

Electric Light Nov 14th 1898

J. H. Ford

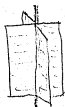
Charcoalton
M. M. Forman



M. M. Forman

258

Electric Light Nov 19, 1878



~~Chas. B. Smith~~
M. M. Jones 1142
Mrs. C. C. Jones
J. H. Jones

5000

~~175/20~~
~~1/2~~

5 1/2

5 1/2

16

259

A wire of $\frac{1}{16}$ diam and 1 ft long has
 surface $\frac{3}{100} \times \frac{1200}{100} = \frac{3600}{100}$
 $.03 \times 1200 = 36$ area exposed

Wound in form of spiral

The spiral must be wound to get
 the proper effect in the ratio
 of 67 inside surface to 27 outside
 the basis of this calculation
 was made from a wire 1 foot long
 100 inch diameter

Each in 2 ft

HA E

Nov 15 1908

Chapman

M. A. Forster
 Mr. Forster
 Chicago

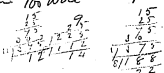
8 Light turns
 find wire 1 ft long with 100 units heat
 Concentrate

$\frac{1}{4} \times \frac{1}{8} = 25 \text{ in } \frac{1}{8} \text{ long} \quad 25 \times 56$

$\frac{3}{4} \times \frac{1}{4} = \frac{3}{16} \text{ wire} = 9 \frac{3}{8} \text{ incl surface long}$

$\frac{1}{4} \times \frac{3}{8} = 25 \times$

$\frac{1}{4} \times \frac{3}{8}$



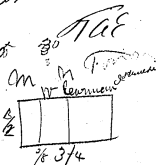
Ok! 2/2/2/2

Equal $\frac{1}{4} \times \frac{5}{8} = 12 \text{ u wire}$

$5 : 3 : 50 : 30 \quad 100 : 60$

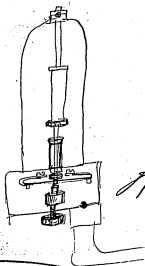
$100 : 60$

$\frac{100}{12.5} = 8$
 $\frac{60}{7.5} = 8$
 $\frac{30}{3.75} = 8$
 $\frac{30}{3.75} = 8$



Electric Light No 15.1878

16



1878

Chas. Batchelor

M. M. Finner

J. C. Barnard

J. D. Smith

263

Electric Light Meter

2000 ft $7^{\frac{1}{4}}$ 6000 ft per hour
6000 $7^{\frac{3}{4}}$ 1500 ft.



3 the length
6 times less



X Garman

Chas. S. G. G. G.

on - m ^{of} ^{of} ^{of} ^{of}

J. J. G. G. G.

8000

$3 \frac{16}{100}$

1000 ft

$9.21 = 8 \frac{3}{4}$

$$\begin{array}{r} 7.068 \\ 9.21 \\ 4.75 \\ \hline 1.46 \end{array}$$

$$\begin{array}{r} 8.0424 \\ 44.2544 \\ \hline 9.21 = 66.48 \\ 8/66.48 \\ \hline 8.3 \end{array}$$

~~30.005~~ - 22 ft $7^{\frac{1}{2}}$ 6ⁱⁿ per hour
852 4 six miles per hour

$\frac{5280}{31680}$

• Cubic feet 28.2
 { 30000 through 6" pipe 22 1/2 ft per hour
 852 through 4" pipe 31.680
12.5

30000 pass thru Area 28.2 - 22 1/2 ft per hour
 852 " " 12.5 = 31.680 ft per hour
2570

K12 NAE

$ \begin{array}{r} 25000 \\ 1230 \\ \hline 313 \\ 1563 \\ \hline 59800 \\ 1807 \end{array} $	$ \begin{array}{r} 2240 \\ 1120 \\ \hline 4480 \end{array} $
---	---

Electric Light 761-151-1878

Chatratchai
 M. A. Jordan
 Mr. Lawrence Johnson

Electric Light
Nov 16, 1878 28.

100 = 1
200 - 4
300 - 9
400 16

Chapman
100 cells
100 cells
400
800
16.
32
25
28

02 candle
09
18
32
1:28
5.12
20.48
12.50
15.68.

38
56
78
15.68

25
25
50
625
12.50

16
16
32
25
512
32
64
96
2024
20.48

Electric Light
Per 16/5/58

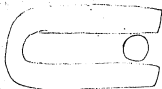
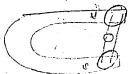


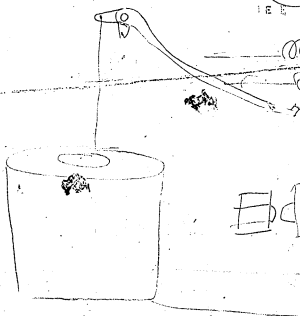
Chart Batcher

in a pipe TAE

Mr. Lawrence Johnson

00000000

000000

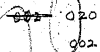


270

3

1/4

12. 16. L
 32 2
 48 3.
 50
 2



5 lamps 8 candles 26

7 burners.
~~250~~
 50
 21
 1030
 40 inch
 160 inches 1/4 inch 35
 2
 5 ohms
 7 burners

100 ohms
 200. 40 lamps
 400
 800 20
 100 ohms 10

40

100. ohms

40

40

4 4

270

Electric Light

Edison's Dynamo electric machine

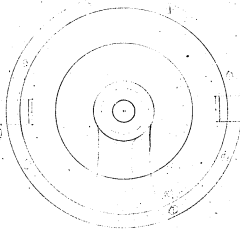
1877

1878

Edison

1878

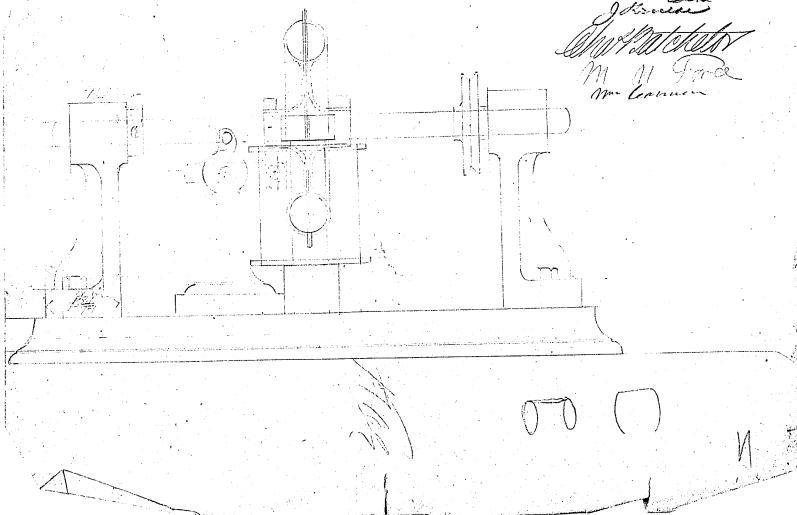
New Canaan



271

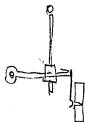
Edison's Dynamo electric machine
Nov 14 1888

J. B. Johnson
Chas. F. Johnson
M. H. Ford
Mr. Cannon

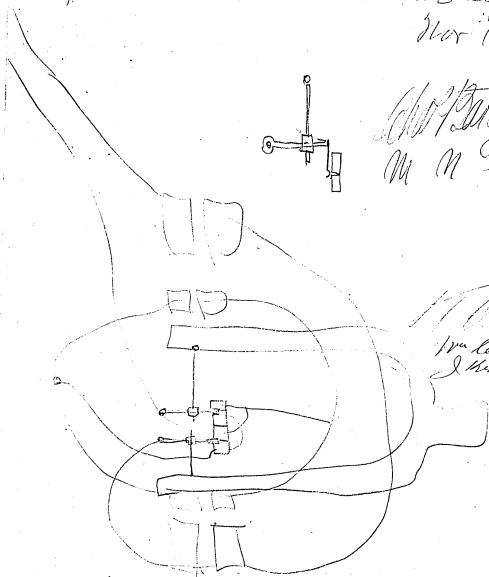


272

Electric Light
Nov 18, 1878



Edw. P. Hatch
M. N. Force



1703
1/2 in. diameter
I. H. H. H.

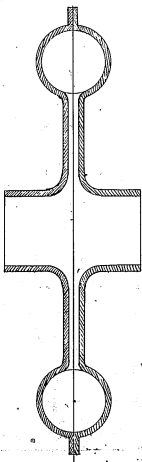
273

Edison

Nov. 19th 1888

Copper No 15 wire gauge American gauge

FROM THE LABORATORY OF
T. A. EDISON.
MENLO PARK, N. J.
U. S. A.



Chas. D. Hatch
W. M. Force
Wm. Cameron
Illinois

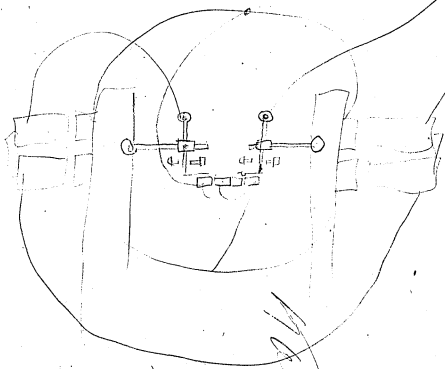
31 1/2
62 1/2
62
18 6 5
1107

Harmonic Dynamo machine

Nov 19th 1885

J. H. P. H.

Chas. Batchelor
M. M. Force
Wm. Lammont



374

11/19/85
374



Electro-light
Nov 20, 1938

25, 1200

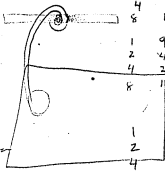
25, 8



Shatzkelets
in a case
Johnson

1000 2
500 4
250 8
125 10 — 100
500

1000
500
125 250
125

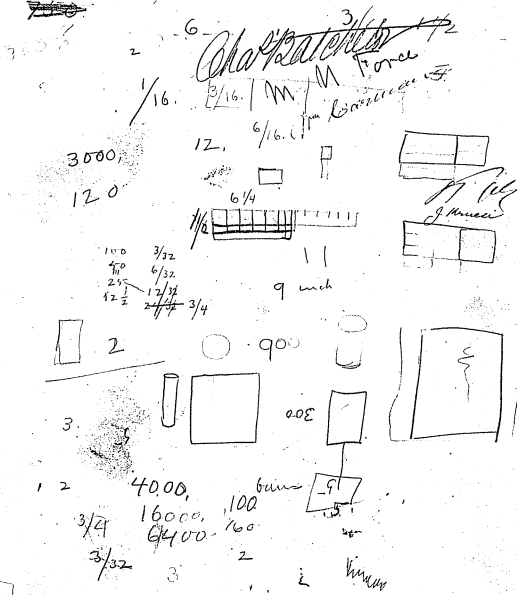


1 1000
2 500
4 250
8 125
1 900
2 450
4 225
8 112
1 800
2 400
4 200
8 100

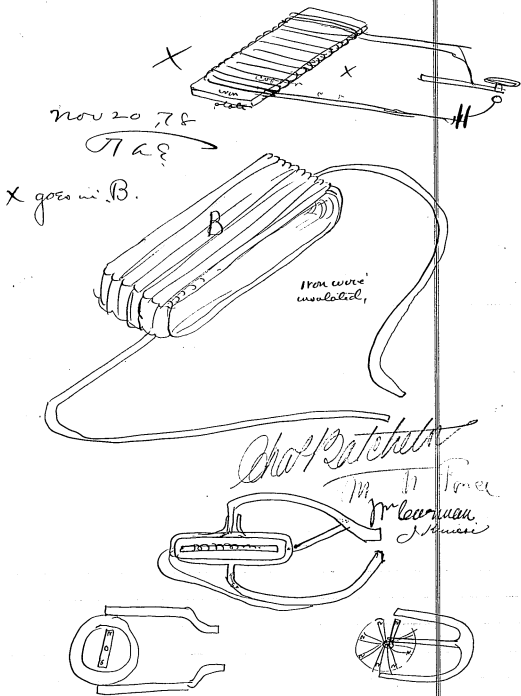
FAE
The Company

8.

Electric Light Nov 20, 1875
2

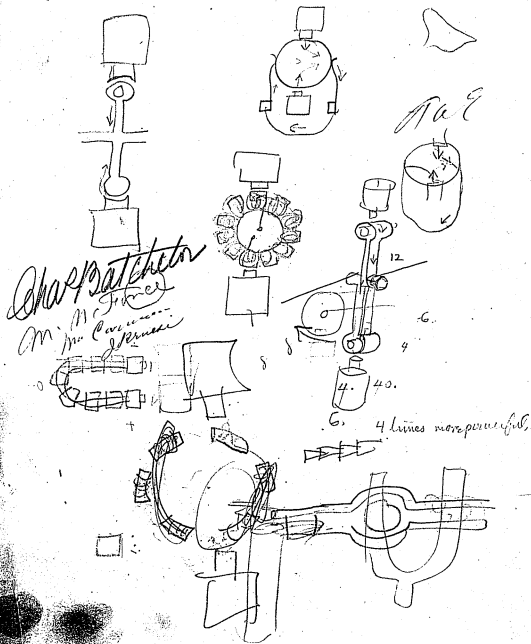


277



278

Electric Light No. 201575



279

Alumina light

Nov 20 1878

Carbon ^{Manufacture of} ~~Manufacture of~~ by ~~the~~

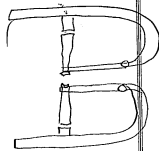
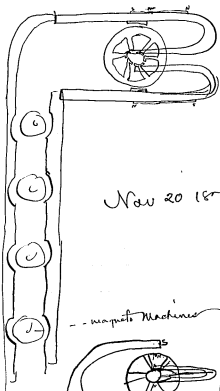
Martin M. Force

Peroxide of iron pure: by pressure
M. J.

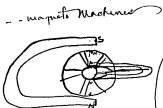
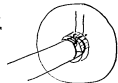
Peroxide of iron & plumbago equal by
weight. M. J. equal by quantity M. J.

Caustic	1	part
Potile	1	part
Peroxide iron	"	"

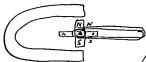
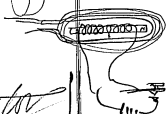
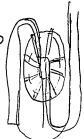
M. J.
M. L. Larnan
J. H. H. H.



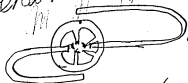
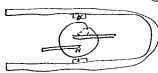
Nov 20 1878.



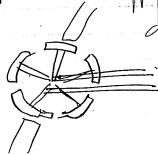
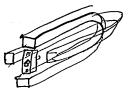
--- magnets Machines



Char. Patches



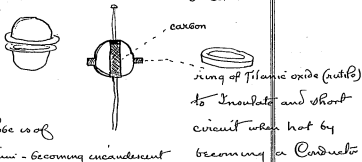
M. L. S.
M. L. S.
M. L. S.



Electric Light

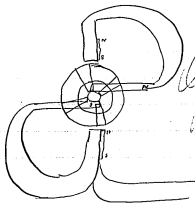
Nov 20 1878

T. A. Edison



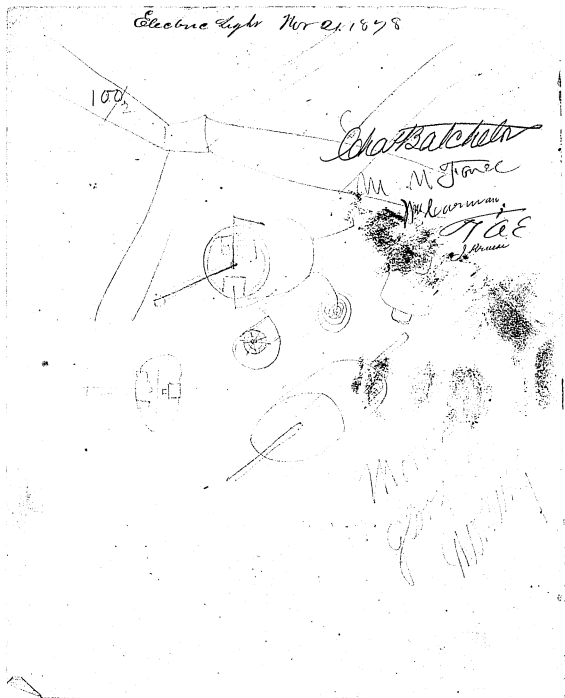
The globe is of
Platinum - becoming incandescent
by radiation & Conduction - Oxygen
is prevented from access to Carbon.

I propose to make a machine that will generate
large quantities of Magnetism ^{by power} as the present dynamo
Machine generates Electrically & use the
magnetism for field magnets for a number of
Diagrams Elec. Machines.



Wm. H. P. [unclear]
Mr. [unclear]
[unclear]

Electric Light Nov 21, 1878



283

Nov 21 1878

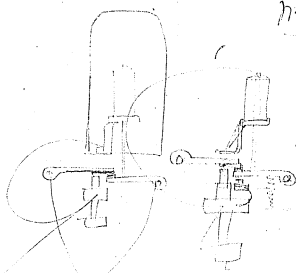
Electric Light
Nov 21 1878

Chapman & Cutler

M. N. Fowler
M. L. Looman

Johns

TAE



284

Electric Light No 22 1878
 Cubic foot mixed 94 hours 4 cell
 Carbon 6 inch surface;



For

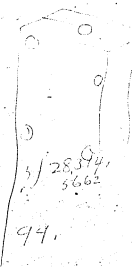


12 each 77.
 24 23
 48 12
 46 .6
 144
 1600 37000
 12 1/2
 1500
 3/10
 26
 121
 864

1728
 5784

1728
 3
 5784

W. H. Hatchers
 M Force
 1500
 M
 J. H. Brown
 J. H. Brown



1 .7854 / 19.6350 | 2 *Excess Light*
14988 *Nov 23 1898*

.7854 / 19.6350 | 24
1570.8
39030

32 32
34 | 13.00 | 0.4
117
32 | 25.00 | 1.8
216

.14854
1570.8
18849.6

Tae
5



John Satchell
1st Force
23
John Satchell

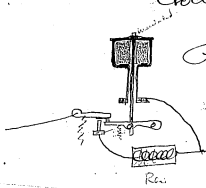
64 | 25.0000 | 0.4
256

70686 / 196500 | 14
141372

(2)

Nov 23. 1878.

Electric Light Model



T.A.E.

This lamp is 90 in Knigs Model given to Griffith's off

Chas. Satchels

M. M. Jones

Mrs. Lawrence J. Jones

289

Electric Light Nov 23. 1878

$6 \times 4 \div 2 = 24 \div 2 = 12$

$12 \times 2 \div 4 = 24 \div 4 = 6$

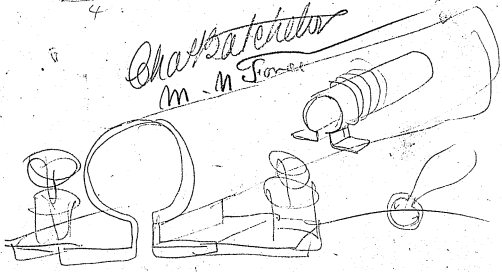
Sum = 12 + 6 = 18



Mrs. Lawrence J. Jones

$\sqrt{6 \times 4 \times 2 \times 2} = \sqrt{48} = 7$

Chas. Satchels
M. M. Jones

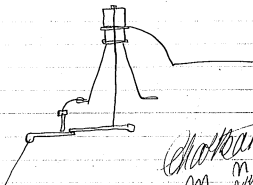


288

T. A. EDISON.

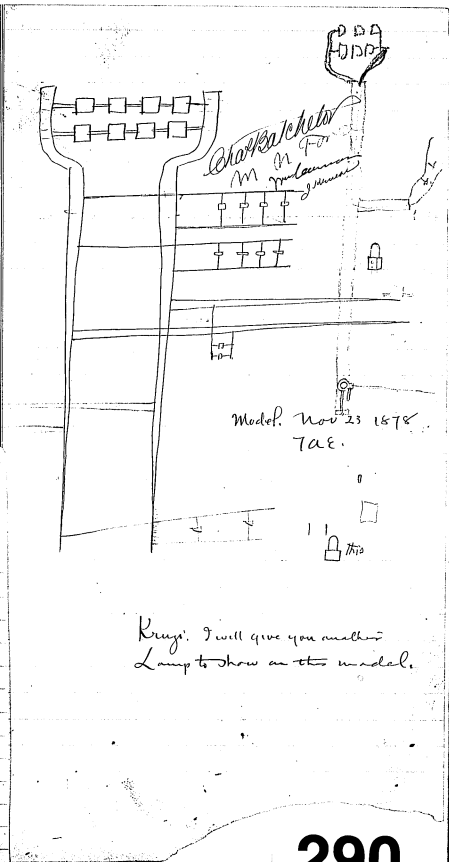
5

Menlo Park, N. J., _____ 187



Charles Ketchum
M. N. Forel
J. J. Johnson

291



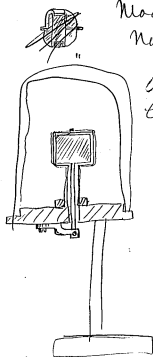
Charles Ketchum
M. N. Forel
J. J. Johnson

Model. Nov 23 1878
TAE.

11
this

Keys: I will give you another
Lamp to show as this model.

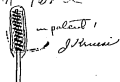
290

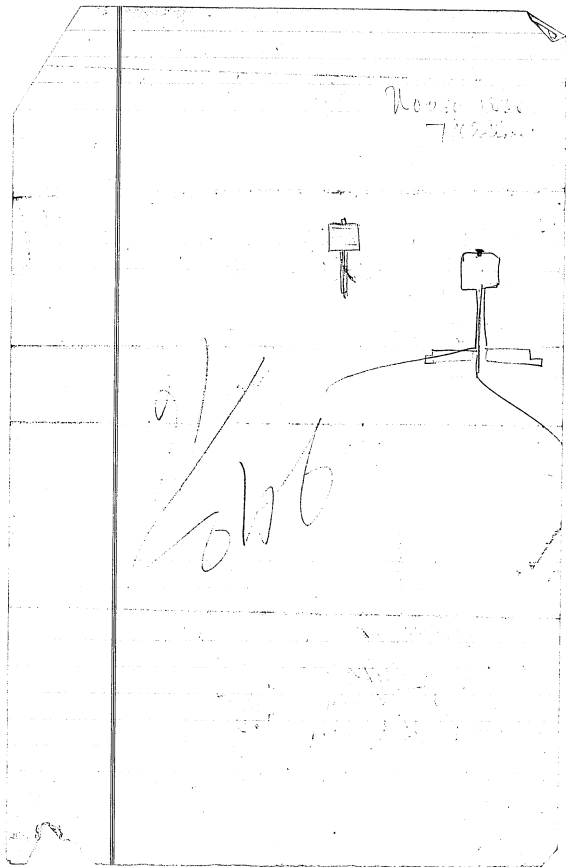


Model for patent office,
Nov 20th 1875

W. A. C.
Chattahoochee

W. A. C.
W. A. C.

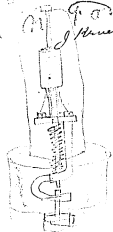
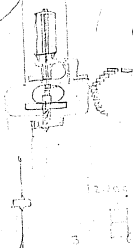
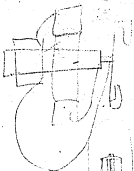




292

Colobue Lyth
Nov 23. 1878

Mr. Comstock
W. Satchel
T. A. M.



4

2

4

100

60

10

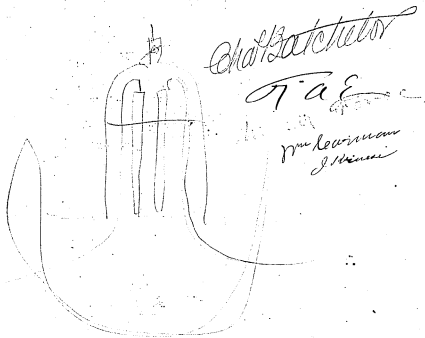
20

10

10088

293

Electric Light Nov 23, 1878



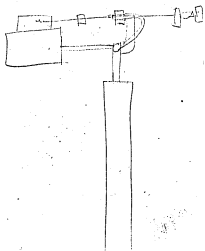
Edison

T. A. Edison

Mr. Lowman
J. H. Kimball

294

Electric Light No. 2388



Chas. Datchler

Mr. Leaman



W.E.
J. M. M.

295

Carbon for Electric Light

Electric Light Nov 23, 1878

Make a mixture of

15 parts of powd. bit. coal }
5 " " Sugar }

15 parts of powd bit coal }
10 " " Sugar }

15 parts of powd. bit. coal }
2 1/2 " " Sugar }

796

15 parts of powd bit coal }
1 part of Sugar }

In making these powder up the
sugar very fine. dont use the
sugar solution.

Wm M Force
Wm M Force
Wm M Force

Electric Light Nov 23. 1878

F. W. E.
Mr. Carrigan
J. M. M.

2 -

$\frac{900}{3600}$

~~Charlottesville~~
M. A. P. M.



3



$\frac{1}{8}$

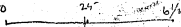
3



100

25

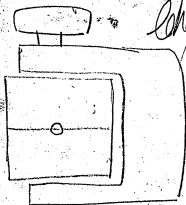
6 1/2



297

3 - 10 = Electric Light 15 46
 Mar 23 1988
 1" 4 2 4

8
 7
 6
 5
 4
 3
 2
 1
 .6
 5
 4
 3
 2
 1
 .6
 5
 4
 3
 2
 1
 .6



John Batchler
 M. M. Jones
 M. M. Brennan
 1.44

173
 514
 125
 29929
 TCS
 Johnson

$$2 = \sqrt{7854^2 + 7854^2} = \sqrt{6168^2 + 6168^2} = \sqrt{1.33} = 1.2$$

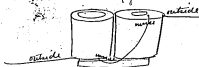
$$4 = \sqrt{1.2^2 + 1.2^2} = \sqrt{1.44 + 1.44} = \sqrt{2.88} = 1.73$$

$$6168 = \sqrt{1.73^2 + 1.2^2} = \sqrt{3 \cdot 1.44} = \sqrt{4.44} = 2.13$$

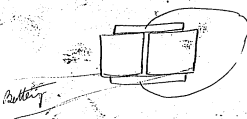
Electric Light Nov 23, 1898

George:-

Take two magnet poles and connect them
on ends so that they will have no magnetism
opposed to each other so:- I think

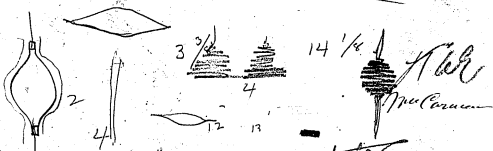


then put a keeper on ^{the} end
see if you can get any magnetism
across the middle of the keepers
20:-

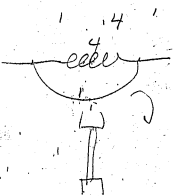


Wm H. Pritchard
M N F. or
Wm. C. Brown
J. Brown

Caecum Lyr. Pln 23. 1578



Short patches
M. M. Jones
J. J. J.



4) 80 (45
 20
 20

4
 5 7 0 | 8
 4

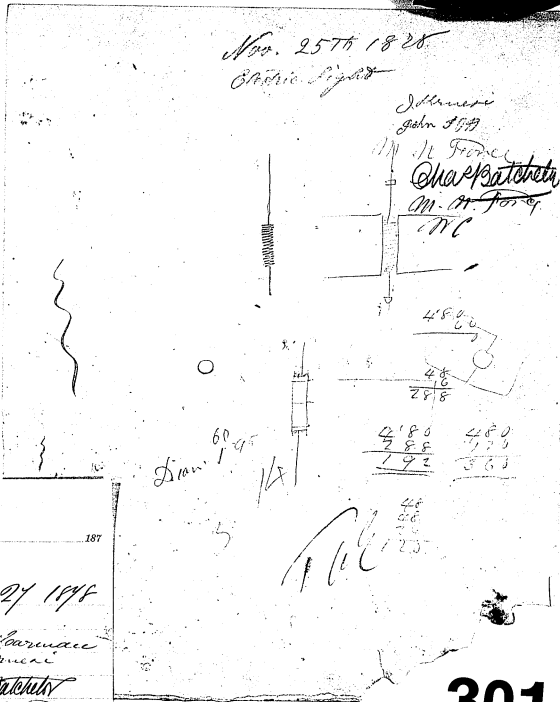
300

Nov. 25th 1878

Electric Light

John Force

Chapatcheta
M. A. Force



Dist. 60 1 45

480	480
288	1728
192	360

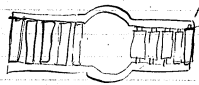
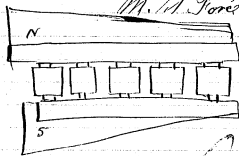
48
56
72

T. A. EDISON.

Menlo Park, N. J., 187

Electric Light Nov. 27 1878

M. A. Force
Chapatcheta
M. A. Force



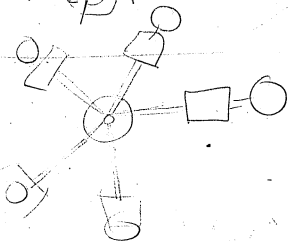
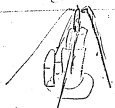
301

302

Electric Light

Nov. 30th 1878
J. Russell

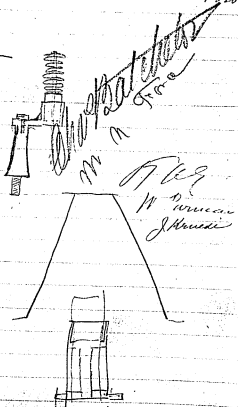
~~Sketches~~
M M For
New Gasman
H & C
J. Russell



T. A. EDISON.

Menlo Park, N. J., _____ 187

Electric Light
pres. to 30 of Nov. 1878



303

304

Electric Light

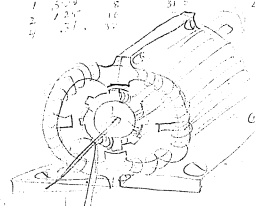
Nov 30, 1911

32.

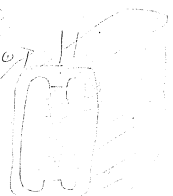
1/4	2,000	125
1/2	1,250	
1	39	
3/4	2,000	
1	500	
2	725	
4	51	

1/4	2,000	125
1/2	1,000	
1	400	
2	200	
4	100	
8	50	
16	25	
32	12.5	

1/2	1500
1	750
2	375
4	187.5
8	93.75

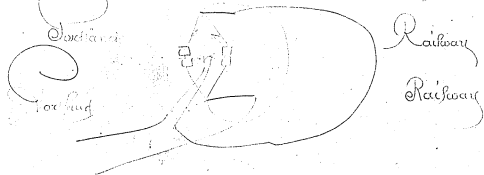


16 - 40
32 - 20



32

John Curran
Chief Electrician
M. M. Jones
Electrician

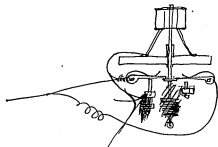


dec 3, 1878



11 Pine
New Brunswick
January

H. C.

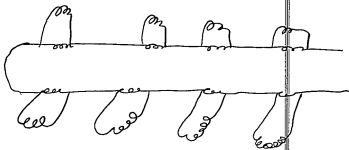


307

Dec 3, 1898

1654
3308
527
4187.

1/2



10
50.
Res of 1/4 was 2500 feet 1/2 of in.

189.
2
358.
44
472. ch for 25 feet 1/4 inch. 1/2 ohms
1888
4
755 1/4
3020 8
604 1 6
1208 3 20

100.
1/2 inch. 0.12
1 inch. 0.033
2
1 mile.
600
25000.
250000.
15000
300000

Lights
100
80
25
12 1/2
6.12
3.06
1.33
0.76
0.38
0.19
9.
1000.

Chas. A. S. Phelps
W. J. Ford
J. M. Russell

1 ohm
3 ohms

Mr. Curran
if I use 3 lights of 100 ohms each in each branch
then I use 3000 lights + increase the intensity



1 1/8 x 3/8 2 1/2 inch

3/8 by 1/4

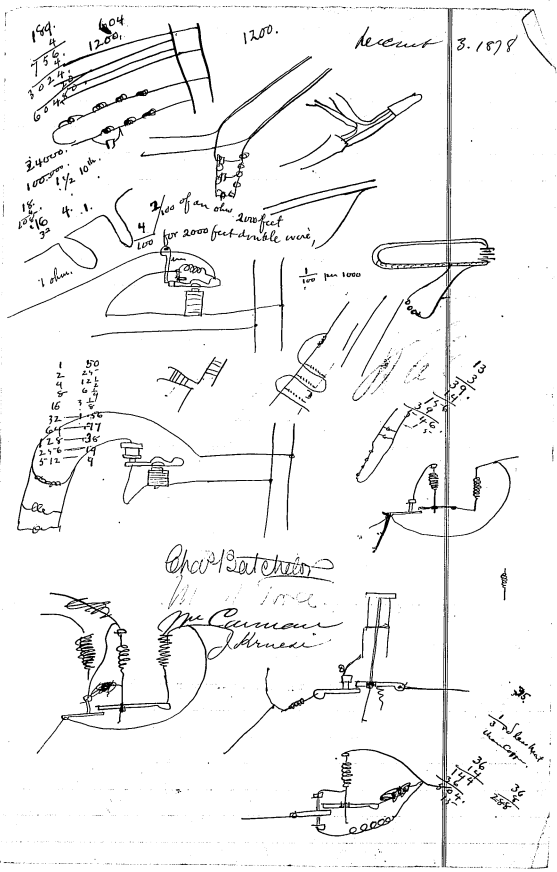
inch surface.

12) 2000 (166
12
800
800
0

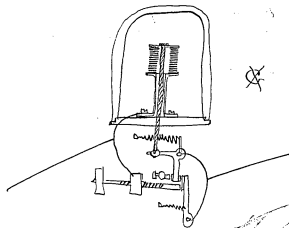
166

2 feet wide 83 feet long
total area .18 hundredths of one inch.

309



Dec 3. 1878



311



244

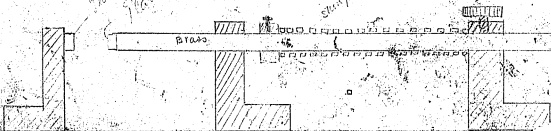
Chap. Patent
M M Force
Wm Lammie
J. H. Mearns

(35815-25)

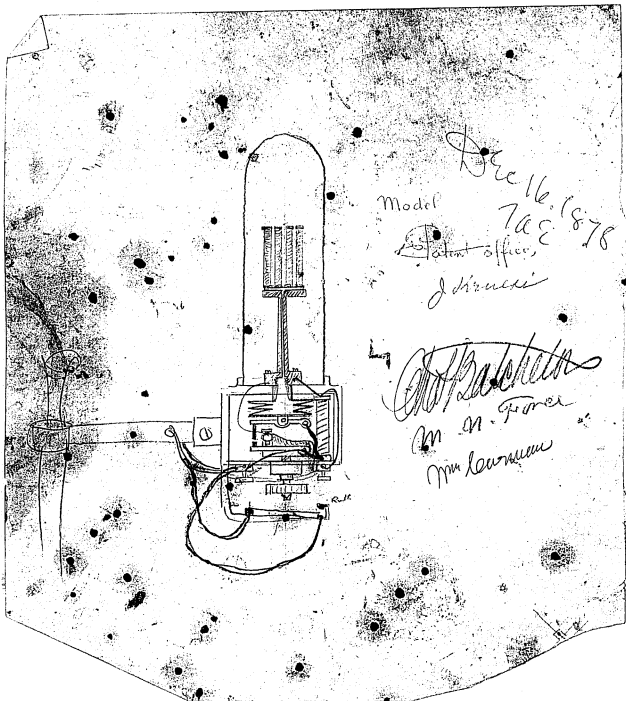
Machinist for
Shah when heating

Machinist for (flat)
Plates 100 feet

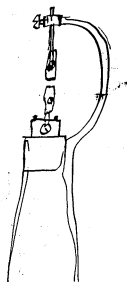
M M Force
Wm Lammie
J. H. Mearns



312



314



Nickel

Steel

Iron wrought

Cast =

Carbon - Wallace,

Coke -

Telephone lampblack -

Pt - Ir 10 pc = 20 pc.

Platinum

Copper - Silver - Zinc

Cobalt.

Chromium

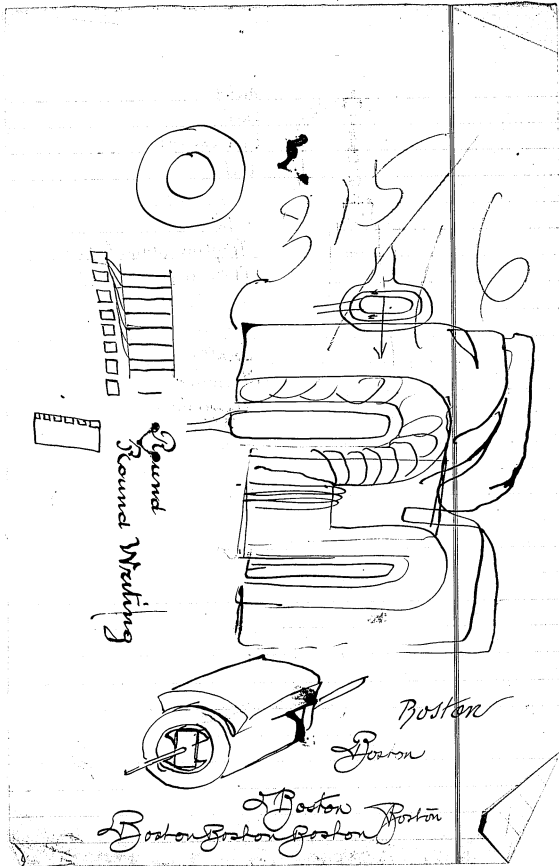
Aluminium

Silicon

Dec 21 1878

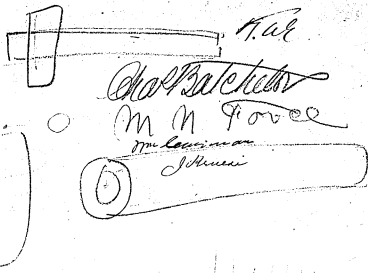
AG

315



315

Electric Light
Dec 26, 1878

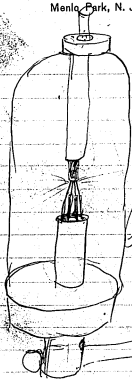


A. A. L.
Chas. Batchelder
M. M. Force
The Leavitts
J. H. ...

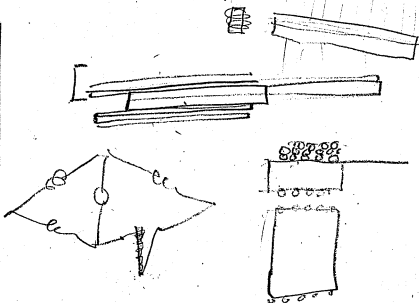
T. A. EDISON.

Electric Light
Dec 22

Menlo Park, N. J., 187



Chas. Batchelder
Dec 23 1878
M. M. Force
The Leavitts
J. H. ...



317

316

Edison Light Dec 26. 1878

Coating wire with a non
conductor of heat

Solidity strength + capability
of long service,

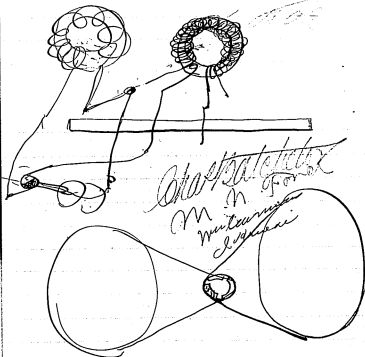
Cheapness,
non liability to ~~break~~ ^{burn} ~~down~~ ^{out}

noiseless

Compactness

319

Edison Light
Dec 26. 1878

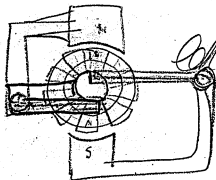


318

187 _____ Menlo Park, N. J.

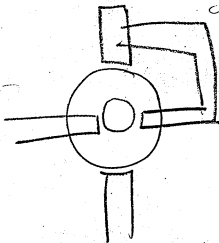
T. A. EDISON.

Electric Light
Jan 3. 1879



Chapatchilro

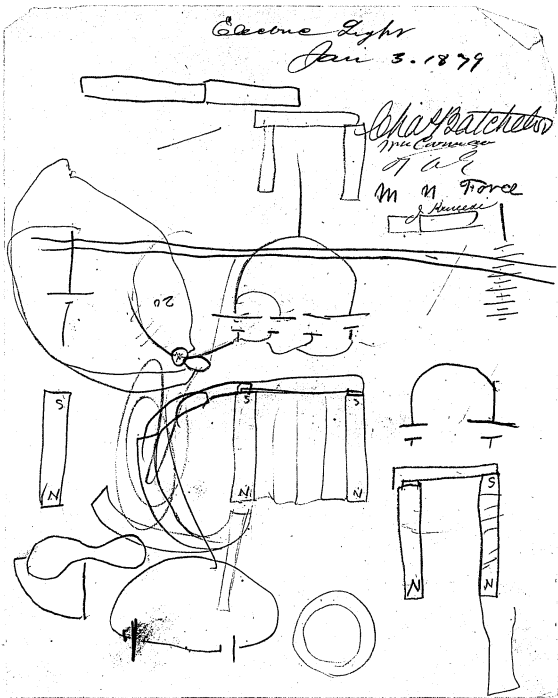
TAL
M. M. Foster
McCormick
J. H. H. H.



320

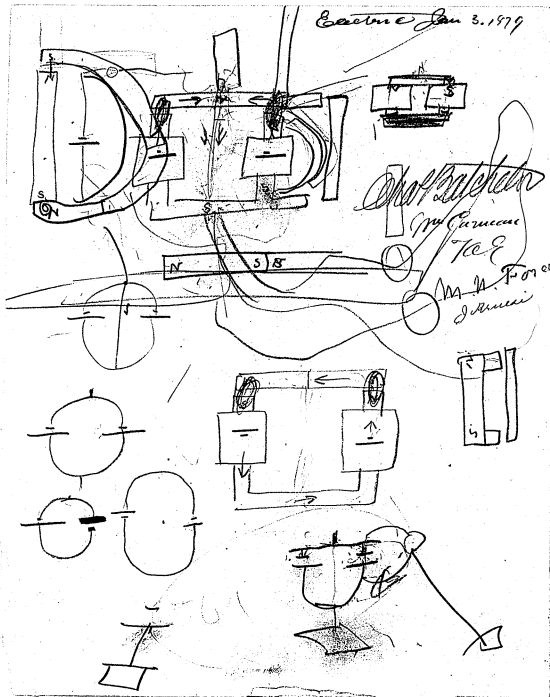
Electric Light

Jan 3. 1879



321

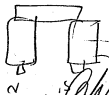
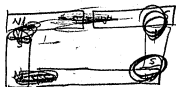
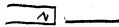
Electric Jan 3. 1879



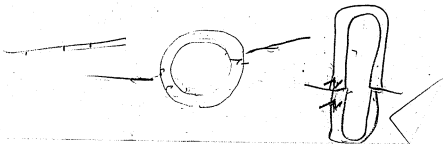
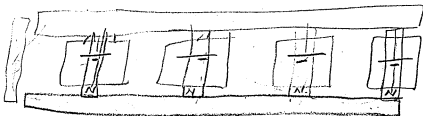
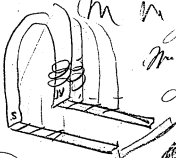
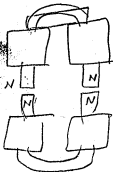
Wm. C. Crompton
T. C. E.
M. H. Forster
J. Russell

322

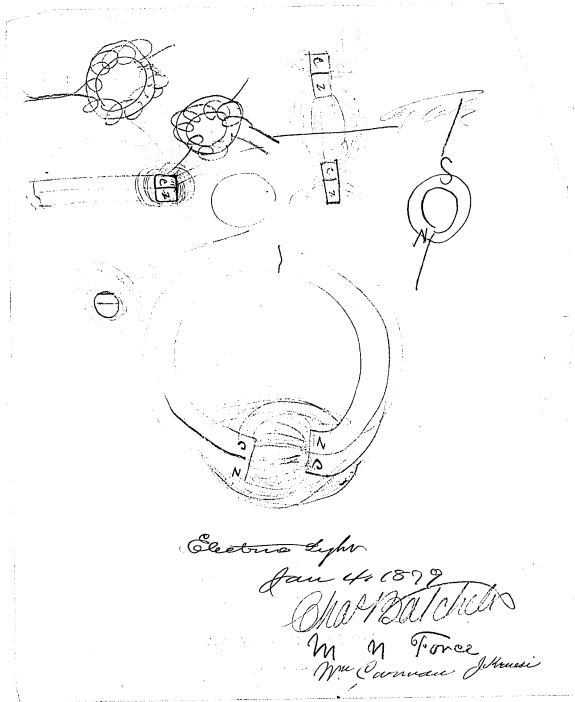
Electric Light
Jan 3. 1879



~~Charles Weston~~
M N
H A C
W. Cannon
J. Hunt



323



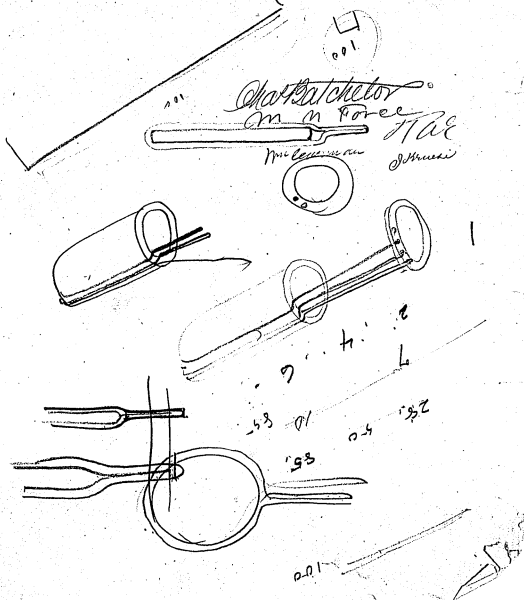
324

Electric Light

Jan 4
1899

0.1

Match detector
on a force
Mr. L... ..
J. H. ...



325

Electric Light
June 4, 1879

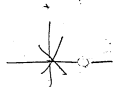
Chart Catcher

728

M N Fordel

Mr. Carrigan

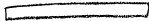
J. M. Smith



1/6 2

326

Eastline Light
Jan 4, 1879



M. L. Cunningham
Chas. Batchelor



M. M. Price J. H. H. H.
18.60 186.00
1.86



12.00 1.200
10 14
b.



10
10
100
200

10
10
100

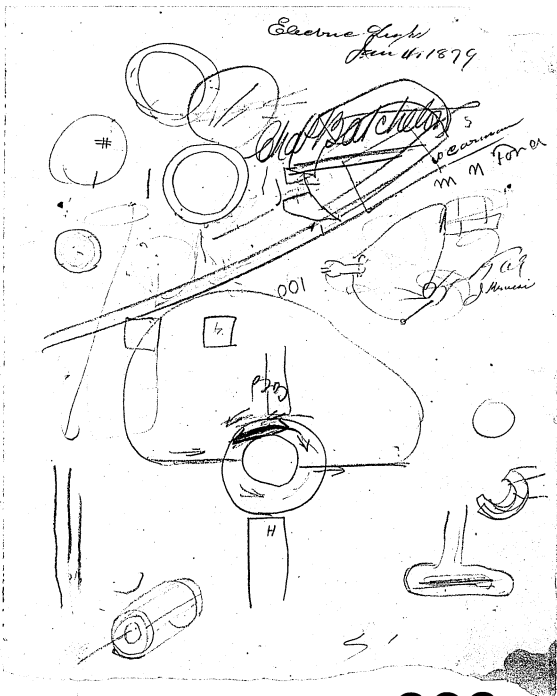
200 450 40 40
77 40 40

186.
0
0.00

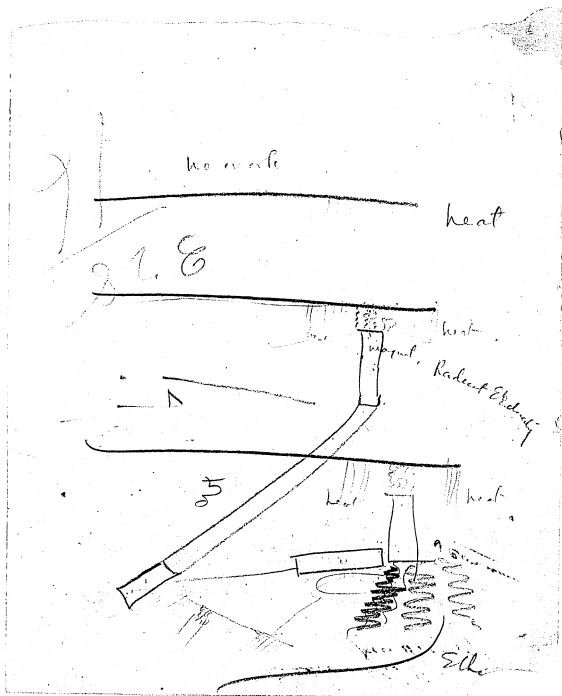
186.00
18.60
1.86

186.00

327



328



328

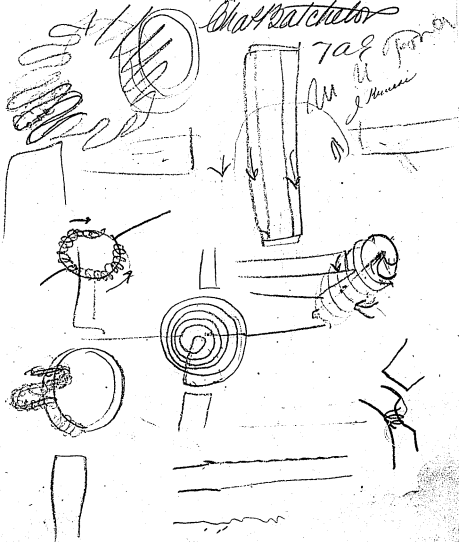
Lecture Light

Jan 4 1879

*The Common
Charcoal Light*

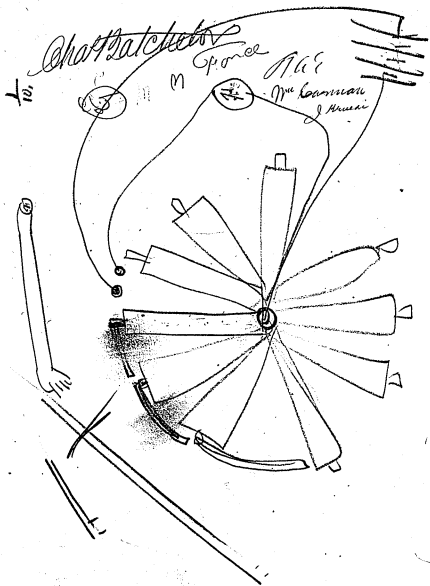
722 Boston

*M. H.
J. H. H.*



329

Electric Light
Jan 4/1879



330

Easton Light

Jan 6, 1879

Mr. Leaman

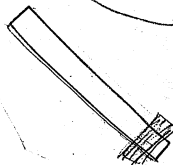
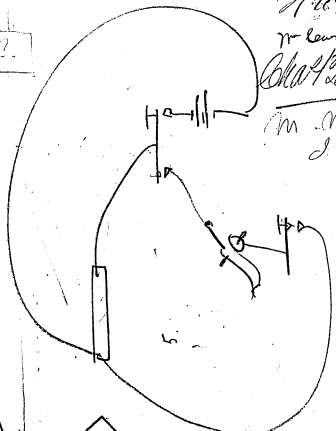
~~Chas. B. Bate~~

M. M. Jones

J. H. H. H.

?

500
10



331

Electric Light

Alb.

Jan 4th 1879

Pro. Comm. Gen.

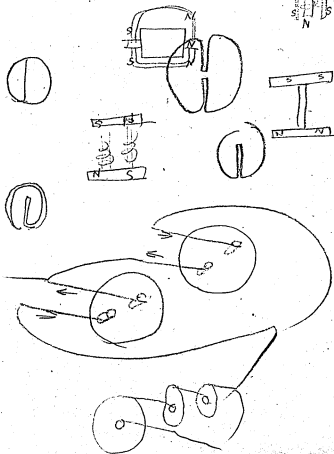
Chas. DeWitt

M. N.



Ground

J. H. M. S.



332

Electric Light

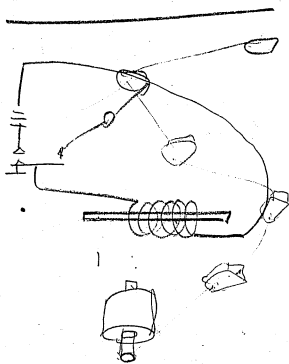
Jan 4 1879

A. W.

W. H. P. P. P.

M. N. P. P.

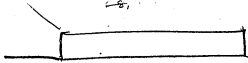
M. N. P. P.



30

333

$$17 \frac{3}{4} - \frac{18 \frac{3}{4}}{17 \frac{3}{4}} = \frac{36 \frac{1}{2}}{7 \frac{3}{8}}$$



529.8
~~27.09~~

4, turns, 8 .625
 8 " 4 .06
 16. 16 1 .78.

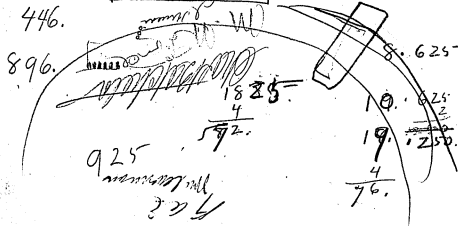


71- 2 inch

$$\frac{14 \frac{9}{4}}{3} = 4 \frac{3}{2}$$

$$\frac{17 \frac{3}{4}}{15 \frac{3}{4}}$$

8 7- $\frac{1}{2}$



George E. ... 11-1879

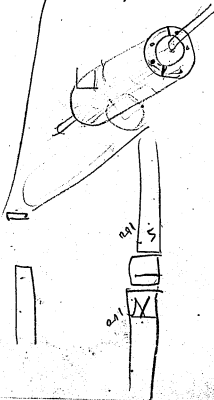
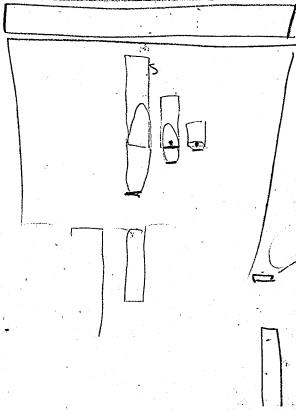
Electric Light

Jan 4, 1879

Mr. Leaman
Chas. Batcher

M R France
Inventor

pt 22



335

Electric Light

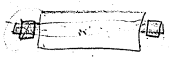
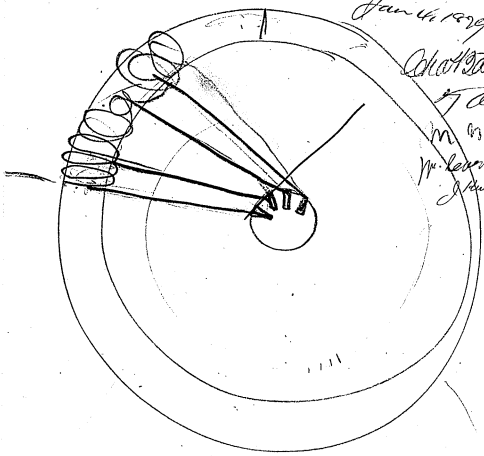
Jan 4, 1894

Edison

T.C.E.

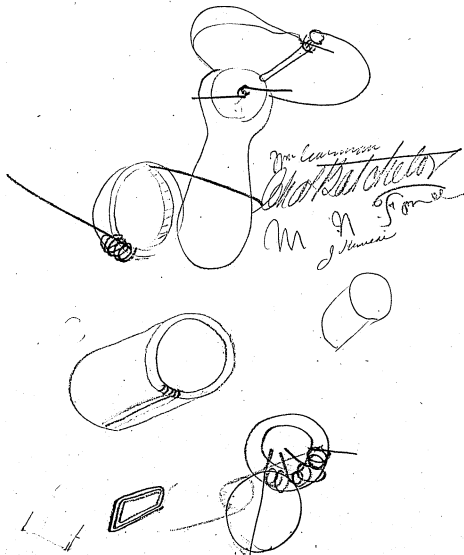
M. J. F. M. C.

M. L. L. L. L.
L. L. L. L.



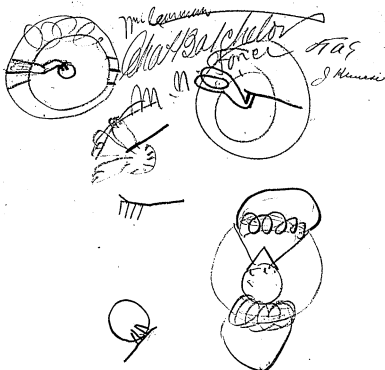
336

Electric Light.
Jan 41 1899
708



337

Carolina Light Jan 4, 1878

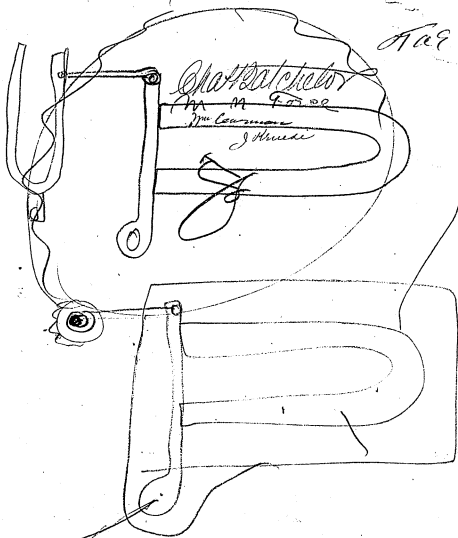


338

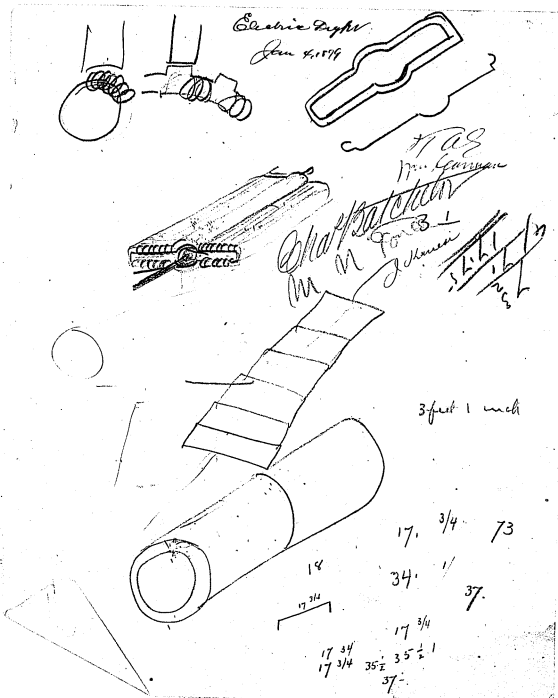
Electric Light

Jan 4 1879

702



339

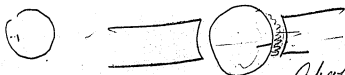


340

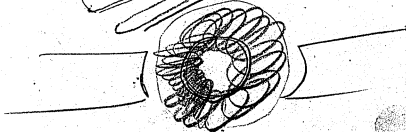
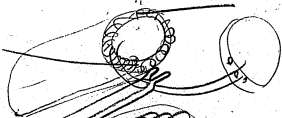
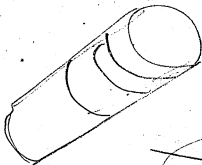
Electric Light
Jan 4, 1899



1728

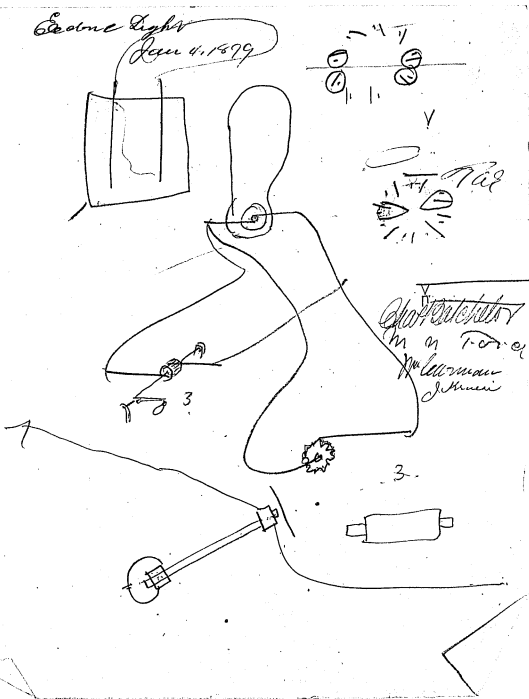


Chattanooga
Sp on a
M N
Mr. Leonard
J. H. H. H.

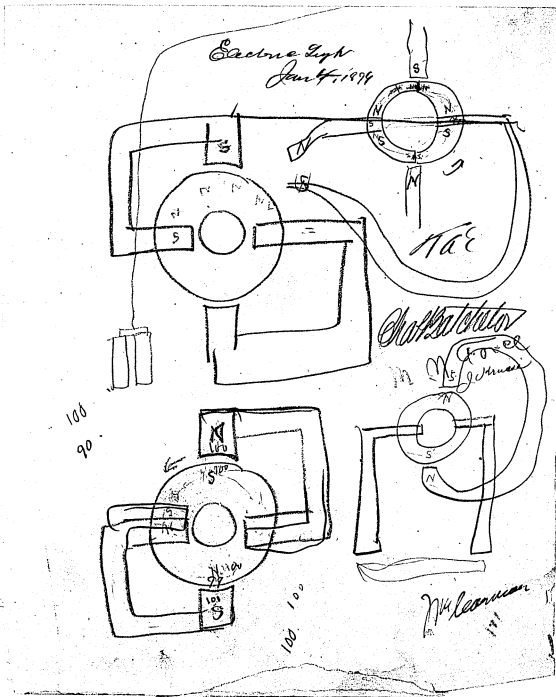


341

Electric Light
Patent 4,159,99



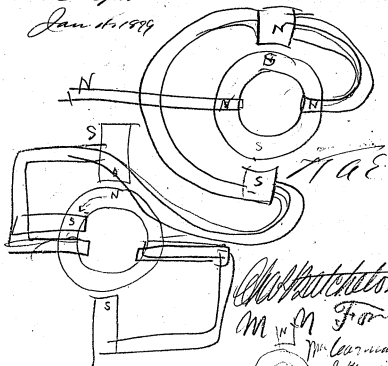
342



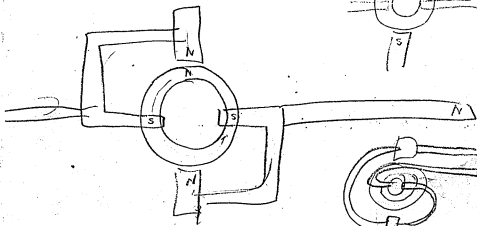
343

Electric Light

Jan 16, 1889

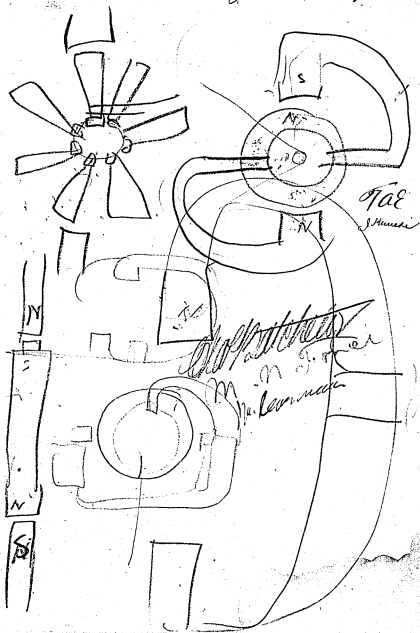


Mr. W. H. Force



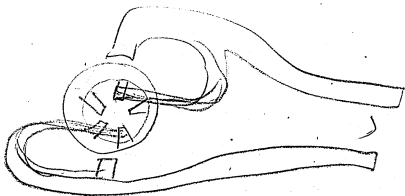
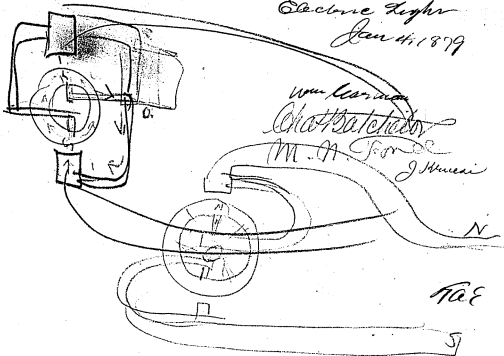
344

Electric Light
Jan 4 1890



345

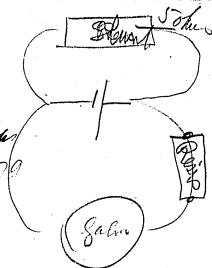
Electric Light
Jan 4, 1879



346

$$\frac{5}{16} \frac{2\frac{1}{2}}{8}$$

Electric Cable
Jan. 11. 1870



$$\frac{15}{8} \frac{2\frac{1}{2}}{8}$$

$$\frac{1\frac{1}{2}}{8}$$

2

Take new res from original - $10 \text{ M. n. } \frac{3}{5}$
 and add new res to total Galv. $\frac{1\frac{1}{2}}{8\frac{1}{2}}$

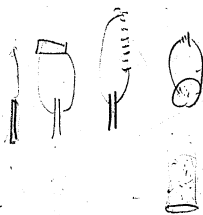
multiply by Short 5

$$5 \times \frac{3}{8\frac{1}{2}}$$

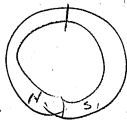
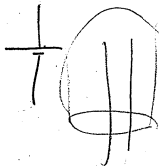
347

Electric Light
Jan 4. 1879

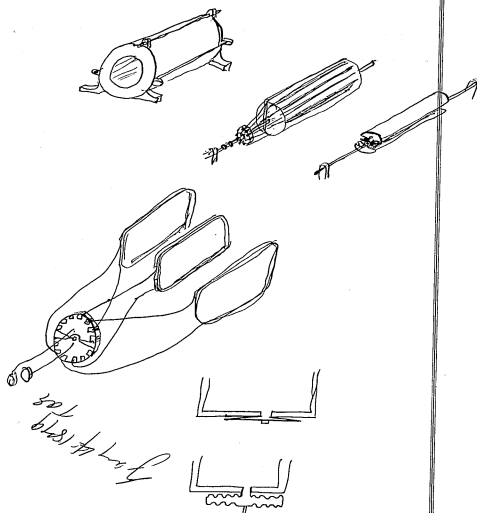
55



~~Chas. B. Baker~~
M. M. Fogg
Mr. Loomis
J. H. Wood



348

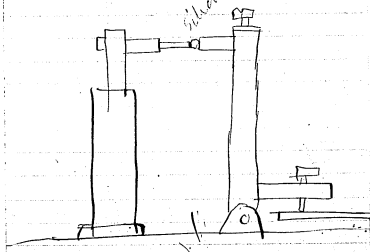


Part 41879
6/25/79

T. A. EDISON.

Menlo Park, N. J., *Jan 12th* 1879

*Illustration etc
TAE.*

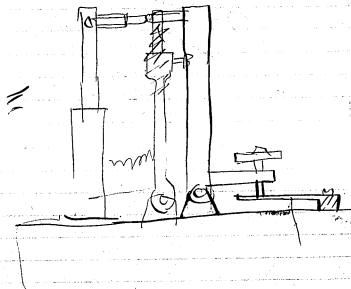


352

T. A. EDISON.

Menlo Park, N. J., *May 12* 1879

TAE



353

Edw. Turner
Circuit

(1)

1881

of them as sufficient for
 the invention consists in
 in a general form in
 construction electric burner and distribution
 of it in a circuit which the
 the current to the source
 of heat and the conductors
 such as platinum
 The further taking of
 I have ascertained that spirals of wires
 consist of finely divided conductors
 such as Platinum Carbon, Boron and
 other infusible substances can be
 formed. The fine wires are made formed
 and put into spiral form simultaneously,
 by employing a peculiar mould
 and great pressure. For instance
 suppose it is required to form a spiral
 of carbon wire $\frac{10}{1000}$ of an inch in diameter,
 such spiral being $\frac{3}{16}$ of an inch diameter
 A mould is made consisting of a die, c
 with a bushing B, secured into the die, a taper
 hole is bored through the bushing having
 an orifice of about $\frac{9}{1000}$ of an inch. Through
 this the Carbon which is mixed with an
 agglutinated substance such as tar is
 forced by great pressure A is the Carbon
 mixture. D D' are steel washers E the
 end of the press screw. The object of the
 washers is to allow of a greater pressure
 than would otherwise be possible
 were a plunger used the latter bounding
 under great pressure -

354

(2) Carust.

The Carbon as it is may, if there be sufficient tar mixed with it be wound in a spiral form on a wooden mandril, with thread cut in it, into which the Carbon presses; This is baked, and the mandril unscrewed to a row of the further baking of the spiral at a much higher temperature, but if there be but little tar mixed with the Carbon an attachment is made off to the orifice of B (Fig 1) - which gives the soft Carbon a spiral twist as it issues from the attachment the latter being only an extension of B curved to represent nearly one turn of the spiral to be formed. ~~A further method of forming the spirals consists~~ Spirals of various sizes may be formed so that one spiral may fit inside the other & thus allow of a great resistance with a small radiating surface, when employed ^{as an} ~~in the~~ electric burner.

Another method of forming the spirals consists in cutting a thread in a rod of nickel or other refractory metal. This thread represents the spiral to be formed. Into this is forced by pressure the plastic or semi-plastic material by means and after a steam plunger forces out all of the material except ~~at~~ the threads. The two ends of the spiral are so arranged that the

plastic material will sublimate around
 platinum or other metallic wire so as to
 carry the current to the spinal, after the
 plastic material has been moulded. It is
 best baked in the mould so as to harden it
 sufficiently to allow of it being withdrawn
 from the mould & baked at a higher temperature.
 The mould might be a plaster of Paris
 one, ~~the~~ the formed by ~~more~~ allowing the
 liquid plaster of Paris to set around
 the top and ~~on~~ unscrewing the same & forcing
 in the Carbon; then the Carbon could be
 baked in one operation and at high
 temperature. Another method of forming
 the spinal wires consists in forming spirals
 of wood and Carbonizing them in moulds.
 The best material for making the plastic Carbon
 consists in exposing in a sealed crucible
 to a high temperature for several hours
 ordinary lampblack, after which this is
 mixed with adhesive substance such as
 honey, Tar, Turpentine, Asphaltum, Glycerine &
 other viscous substance containing a
 large amount of Carbon.
 * When ^{silicium} ~~silicium~~ and a small quantity of the
 oxide of silicium is mixed with it, but
 I am still engaged in experimenting upon
^{and concerning its determinations}
 which is the best and most perfect

metallic and a very 4. Conductivity from
Carbon where it passes to

is used in a contact or disconnector
agreement to mix with Silicon, where Silicon
is used platinum wires cannot be used to
make connection with the spirals as Silicon
combines with platinum hence other metal
must take its place although if the
End of the spiral is made a large
size so that the temperature will not
raise above a red heat platinum may
be used. ~~as a substitute for Silicon is~~
~~that it is not a power or not~~

Another method consists in working into
waxed or other fibrous thread,
plastic conducting matter, winding
in a spiral & afterwards baking &
Carbonizing the string or thread,
The spirals are to be placed in a sealed
vacuum and ~~the~~ and connected to
the source of electric energy by
platinum wires, The Carbon, Silicon
Boron or other finely divided metal
made ^{thin} in the form of wires may be coated
with an infusible non conducting oxide
such as Alumina, Zirconia, Lime, Magnesia
to ~~prevent~~ pyrolyze it but in most cases
this will not be necessary as the substance
will hold its position, not becoming soft
if it be Carbon, Silicon & Boron, Titanium,
Chromium at very high temperatures,

5 - Coucat

is a part of my invention.
Consists in employing a ^{number of} continuously
rotating dynamo machines, ~~connected~~
in a shell or slots ~~across~~ across the main
street collectors multiple are, each
house is provided with one of these
motors and a wire leading from the
cell, ~~connected to the place~~ to a room above
carrying a conductor disconnected the
motor from the circuit. The motor
when connected owing to its high resistance
and the small friction of the parts,
requires but a small number of foot
lbs of energy to keep it continuously
rotating, say 300 foot lbs.
in addition to the regular commutator
connected to the wire of the dynamo
there are ^{one or more} ~~one or more~~ subsidiary commutators
with ~~many blocks as there are~~
~~two blocks with ten blocks~~
~~each, but consisting a single~~
block ~~each~~ with 10 blocks in each
These commutators are not carried
around by the rotating spindles
but the rotating shaft passes through
the center of the shell carrying the
blocks and a spring connected
to the shaft & one of the main wires

6 Current

rotates with the shaft and sweeps over the faces of the 10 commutator blocks at each revolution of the shaft to each commutator block a wire proceeds to a lamp of 10 ohms resistance. The other ends of all the lamps coming together and are connected to the other main wire, ~~when all the lamps~~ ~~any~~ any lamp may be connected by turning a button at the lamp which closes the circuit. When all the lamps are connected, and the engine rotating. The amount of current passing to ~~any~~ ^{many} lamps is entirely independent of the speed of the engine but one lamp at a time is placed in multiple arc thus keeping the resistance of the Horse or Branch constantly 10 ohms even if the whole of the lamps are burning, and this is just equivalent to using 10 lamps of 100 ohms each ^{carefully} in multiple arc. The electromotive force required in both cases is the same, and all that the engine accomplishes is to ~~reduce~~ reduce the resistance of the lamp from 100 to 10 ohms. The latter being an easier problem

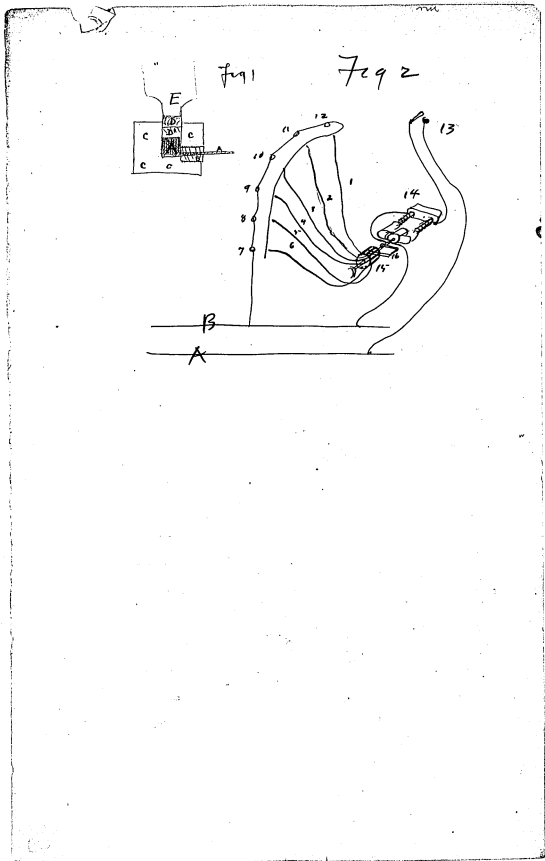
7 Circuit,

To reduce the resistance of the lamps to one ohm each keeping the electromotor force ^{main} & conductor the same, another arrangement of the engine is required. The lamps having one ohm resistance are arranged in a series of 10 and each lamp has a switch ^{by} which it may be inserted or withdrawn from the circuit, a separate wire from each lamp goes to a commutator block, and over this passes the spring connected to the revolving shaft, and at this spring being connected to the main line, the wire from the other main passes through the 10 lamp returns back through each lamp but is not furnished through a switch at each lamp except this return wire with a commutator block the engine through a rotating incises the time of contact with the main circuit as each lamp is thrown in circuit and each commutator block connected both operation being done ^{simultaneously} by a switch in the lamp. Fig 2

Obeys the arrangement 7 & 9 10
11 & 12 are the lamps A B main

Caveat

main conductors 15 Commutator
 1 2 3 4 5 6 Wires leading from
 the blocks on 15 to the lamps. 13
 a switch for starting the motor.
 These are various methods of making
 the masses of contact with the main
 circuit. for instance a commutator
 might be used with a single block,
 which was only a 10th part of the
 circumference of the commutator shell at
 one end & covered the whole circumference
 at the other end, a sliding spring
 might be used which slides from one
 end to the other by means of the
 movement of a centrifugal governor
 the movement being obtained by
 increase of speed in the engine,
 the engine's circuit might pass
 through the lamp stand, and
 a resistor might be thrown in the
 engine circuit or out when the lamp
 was connected, the increase or decrease
 of speed of the engine would cause
 the governor to slide the spring
 along to give more or less contact



362

Jan 17 1980
Caveat E.L.

TRK says N.G.
File away as evidence

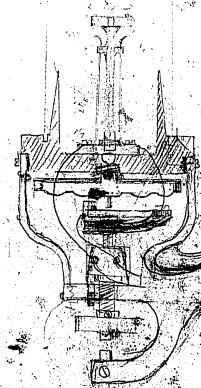
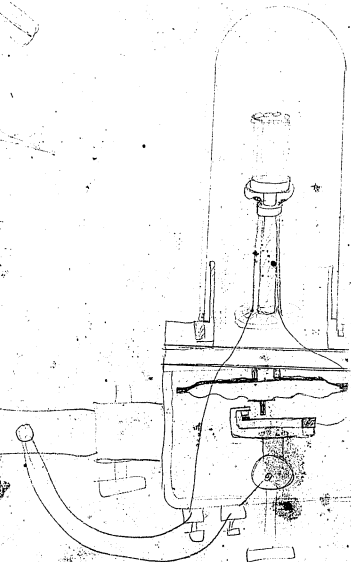
E.L.



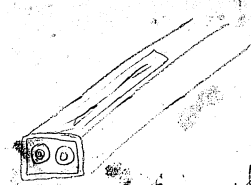
362 / 6

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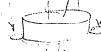
363

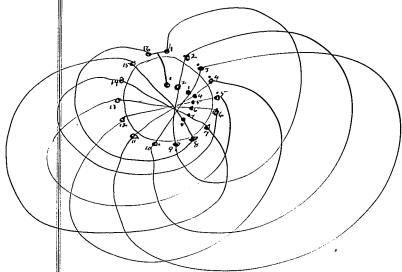


Scale 1/2"

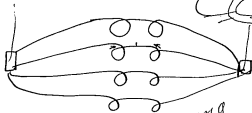
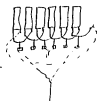
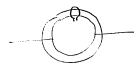


Robert ...
Mr. ...
Mr. ...





194

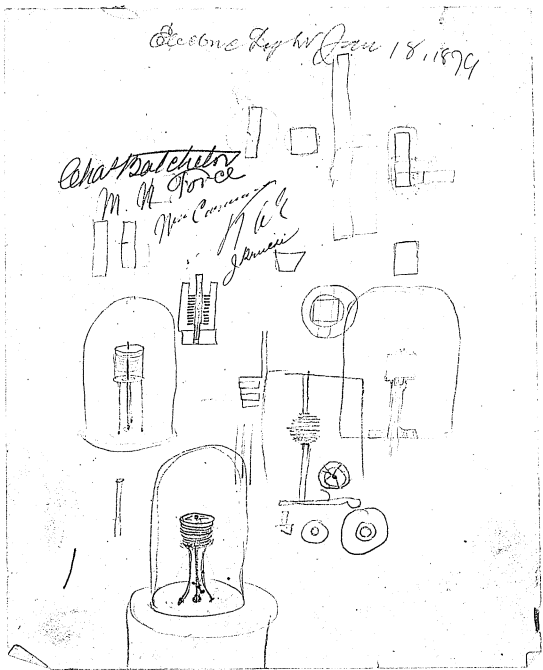


July 18 1899
T. H. S.

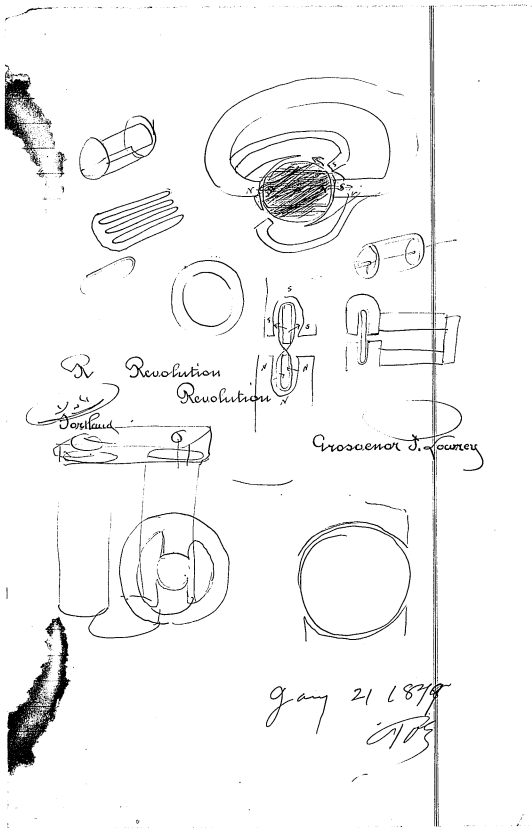
364

Electric Light Jan 18, 1879

Chas. Batchelor
M. H. Force
New Commission
N. C. Johnson



365



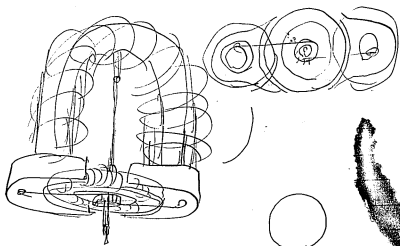
R Revolution
Revolution

Yorkland

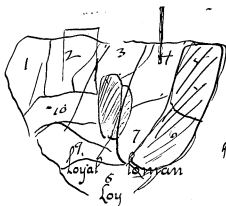
Grosvenor J. Journey

Jan 21 1879
JTS

366
16



366



600978

$1\frac{1}{2}$
 $\frac{1}{2}$ 30
 20 inches

$\frac{1}{5}$ of the amount
 of gas

Pro
 Credit the
 Credit

5600964

6-
 6

$\frac{1}{6}$

of the gas

1200-inches per hour round writing

Boston

Boston

41-inches

3 cubic inches per min

Boston twenty

6

164

9

15

Rochester

$\frac{41}{8}$

$\frac{120}{720}$

156

Worcester

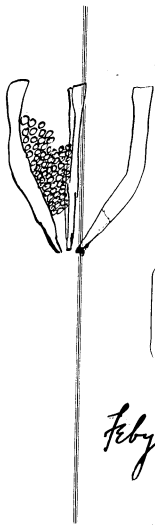
$\frac{328}{8}$

26000

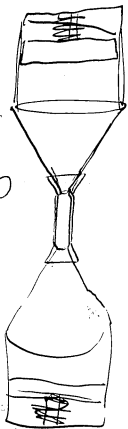
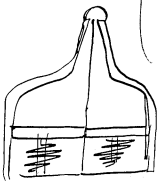
26000946235

$\frac{41}{15}$
 $\frac{205}{15}$
 $\frac{41}{3}$

367



367



Feb 3rd 1878
T.A.E.

367

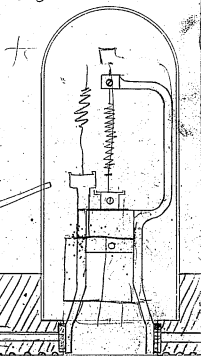
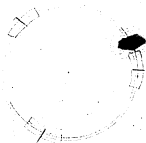
Vacuum Experiments
for Electric Light.

Feb 3 1879
Maxwell
L. Brewster

22 = 2

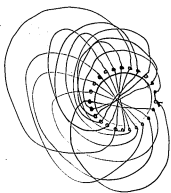
30: 13.9
27 2/3
193

24
11 4/4



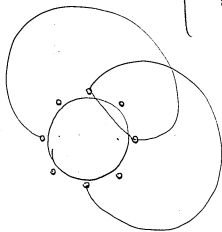
368

Feb 10 1879 G. A. S.

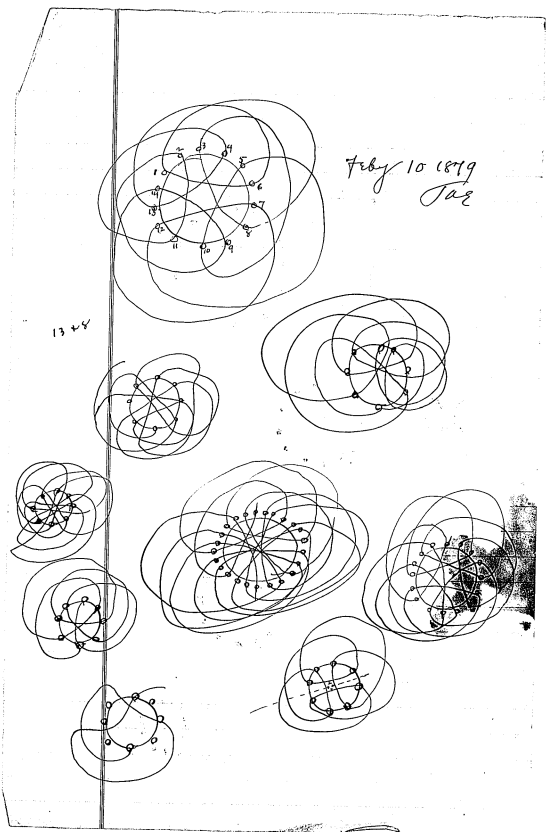


370

370
16

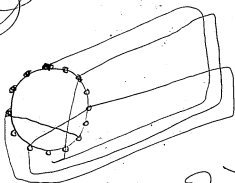
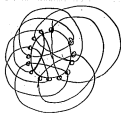


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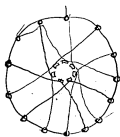


Feb 10 1879
Jae

13 28



371



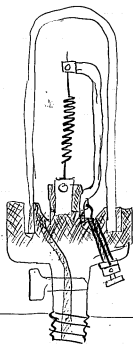
371

Feb. 12th 1899

John Ott

1 first then

3 ~~ft~~ more
J.O.



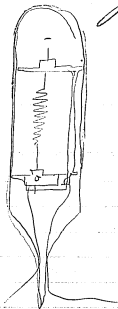
2" in dia

Chas Batchelor

M H Hill

McCann

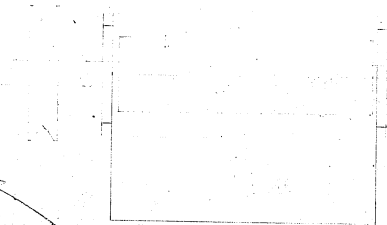
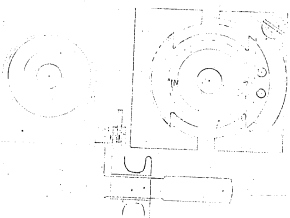
J.O.



372

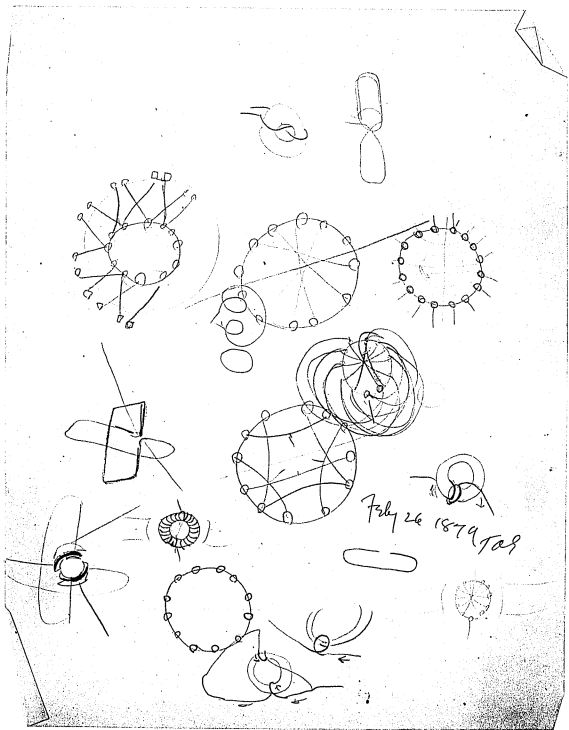
Electric Light

Alfred Baldie



Alfred Baldie

373

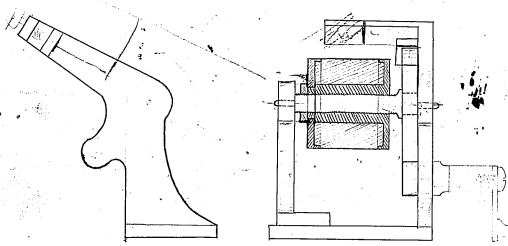


July 26 1879 J. A. S.

375

J. Van Arman

No. 29 Feb. 28, 1859



1996
516

(Chalk Telephone?)
175A

Fig. 9

376

376
16

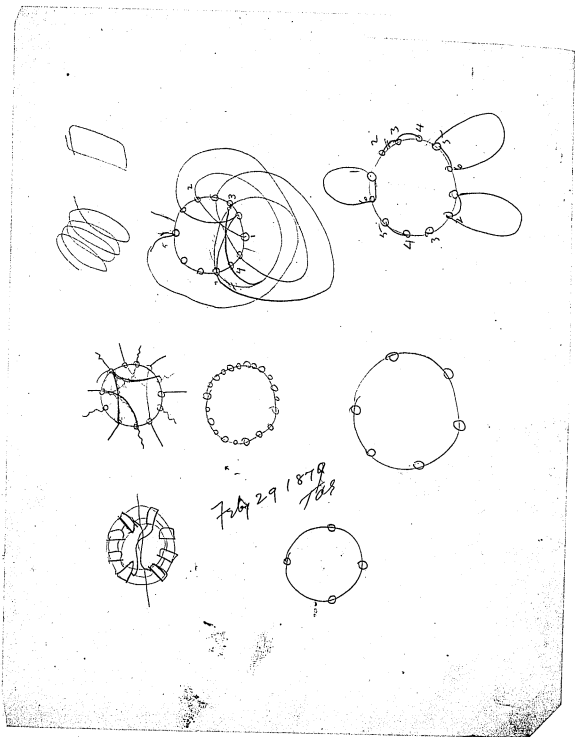
Diain of inside 5.0312 Circum 15.803
" " " 5.656 " 14.765
Length of cap 5.2812 Circum 16.59
Diain base of joint 4.97 Circum 15.59
Diain inside of rough 5.83 Circum 18.20
Diain outside of rough

~~18.30~~
18.30
16.59
3 =

18.30
19.12

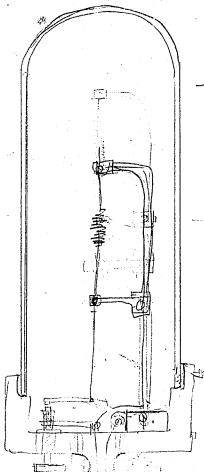
15.59
16.59

376



377

No. 444 March 6th 1879
J.H.



John P. Datchers
M^r N^o 44
The Boston
Office

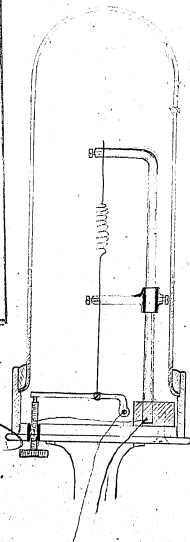
379

No. 444 March 6th 1879

E. Light for Machine
251 Boston

John F. W. S.

5



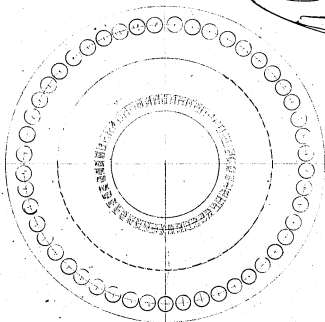
John P. Datchers
M^r N^o 44
The Boston
Office

378

Parative Machine

March 24, 1899

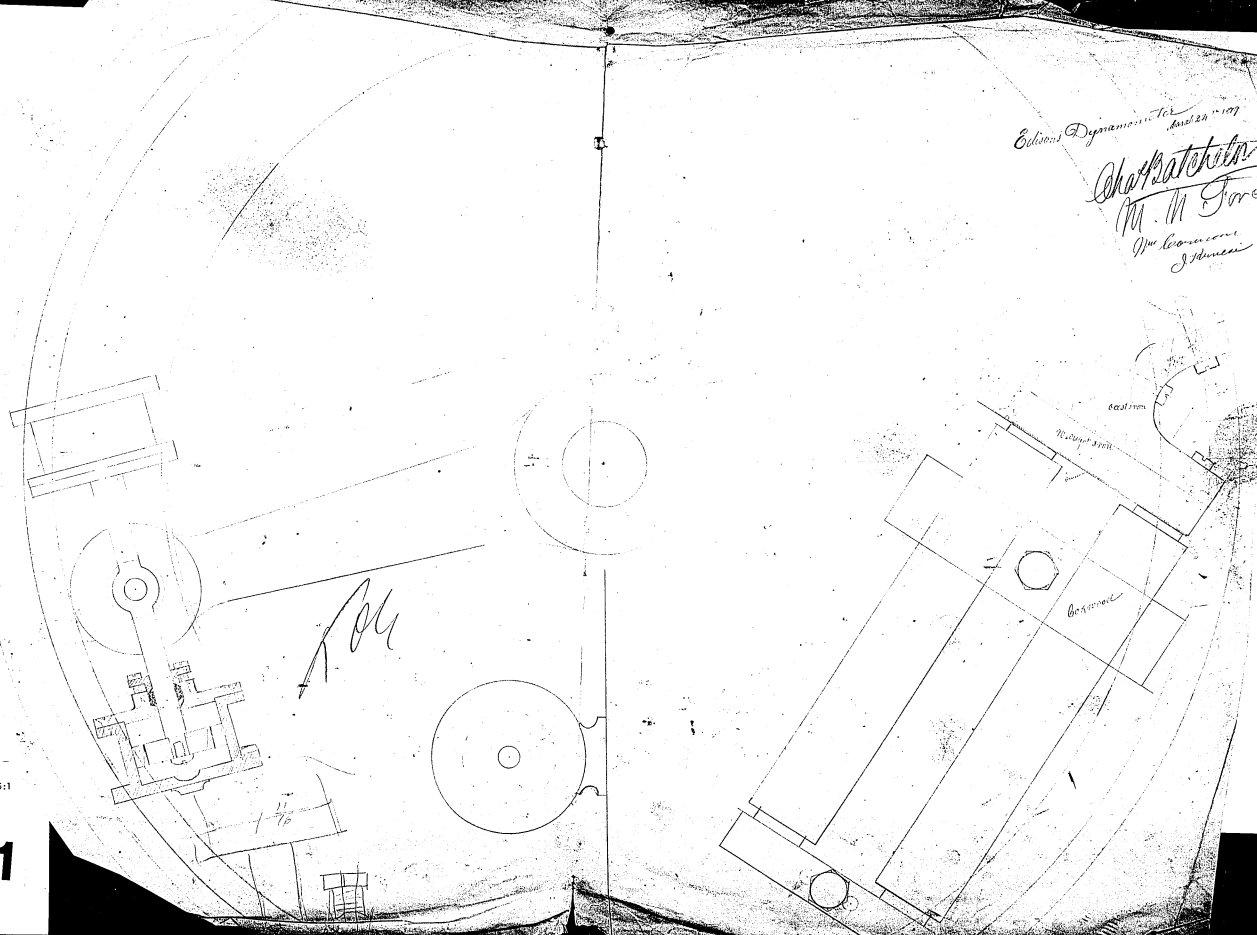
M. N. F. Jones
J. H. Jones



380

Edwards Dynamometer Co. Boston Mass. 1877

Sketch
M. W. Jones
New Haven Conn.
H. H. Jones



THE REDUCTION RATIO FOR THIS DOCUMENT IS 16:1

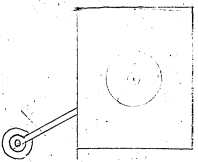
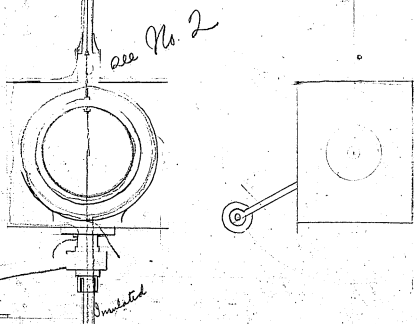
381

1/3 size

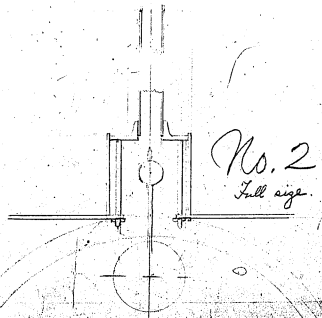
Top like sketch No. 1

Electro Dynamometer No. 1
April 1st 1879
J.H.

Chas. S. Satchel
M. M. Jones
New Providence

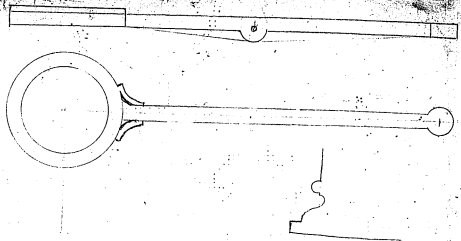


Top



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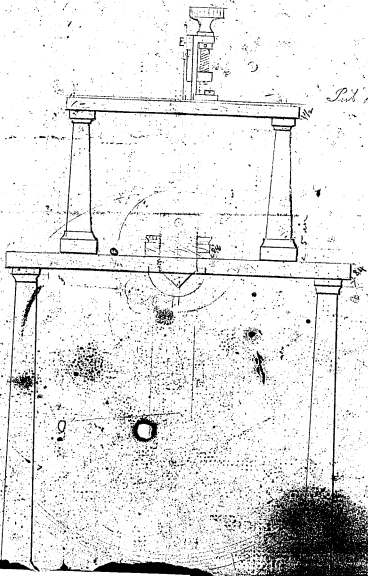
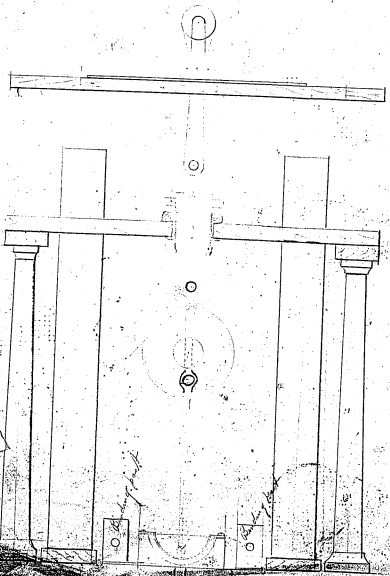
382



$\frac{3}{4}$
 $\frac{1}{2}$ base
 $12\frac{1}{2}$ inside of ring

Man

Handwritten scribbles and notes, possibly including '12 1/2' and 'W'.

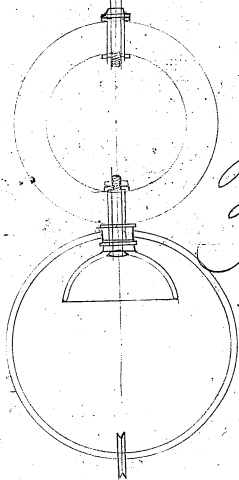


Put on larger screw

Handwritten signature or name.

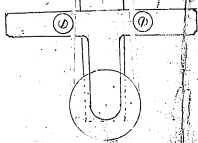
383

1/11
2/11
2/16

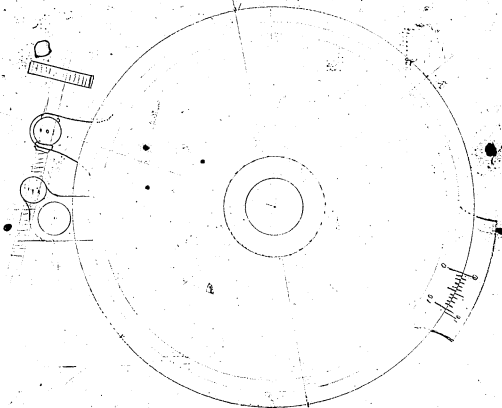


383

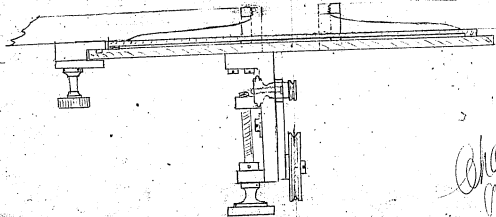
160



Albion Dynamometer
J. Russell April 4th 1879
C. W. Cannon



160



Charles B. Fletcher
M. A. S. 11

THE REDUCTION RATIO FOR THIS DOCUMENT IS 16:1

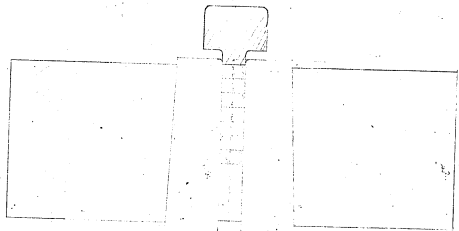
383

No 102 Same mould

Best light
Ch. d. 175, 177

Chas. Hatcher

M. M. Foster
J. M. Co. Inc.
J. H. H. H.



Handwritten signature or initials

(6) Six Pieces
Strong glass
J. H. H. H.

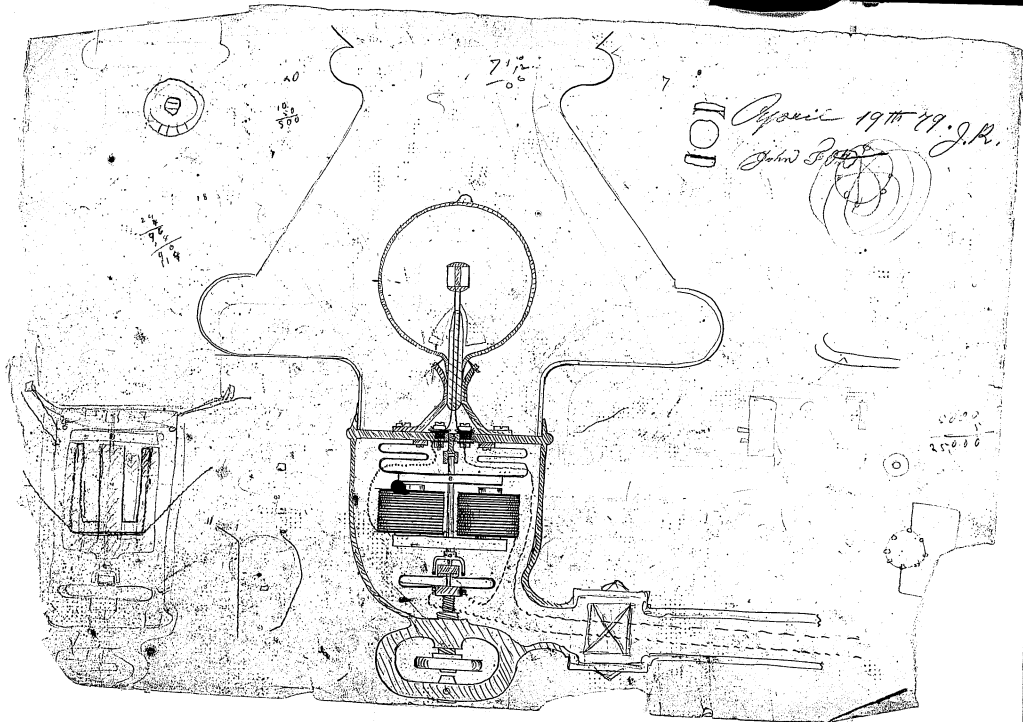
Came to my mind on
Apr 11, 1880
from Cambridge

Handwritten signature or initials

384

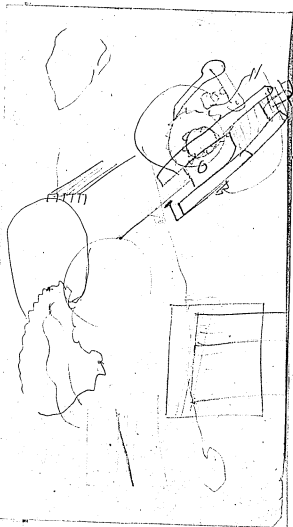
THE REDUCTION RATIO FOR THIS DOCUMENT IS 16:1

385



THE REDUCTION RATIO FOR THIS DOCUMENT IS 16:1

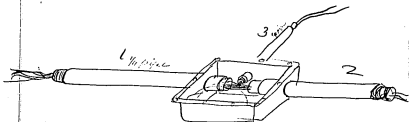
386



389

Patent of model

Brugi make the following model
to illustrate the system of carrying
wires through the hard rubber
lined pipe -



Have a top put on with soft rubber steel
to prevent water coming in. ~~4 in~~
use ball, Make the whole of iron
1 x 2. to 6 in with box 2 all 1 foot
long, 3 to 6 in 6 inch long smaller
the 1 x 2.

A. S. J. Brugi
May 20 1899 C. 28.
Made by Geo Jackson

1/2 pipe flow into hard into brackets (shown in sketch)
pushing into next

14-124

390

5 per cent of advance royalties
and 500 per month = 4 pay 200
amount + wages 300 -

500.

6
390
16

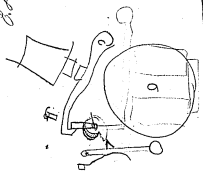
36 9

20.
1
12



Ed. Marie Letting
Maurice

389
16



389

390

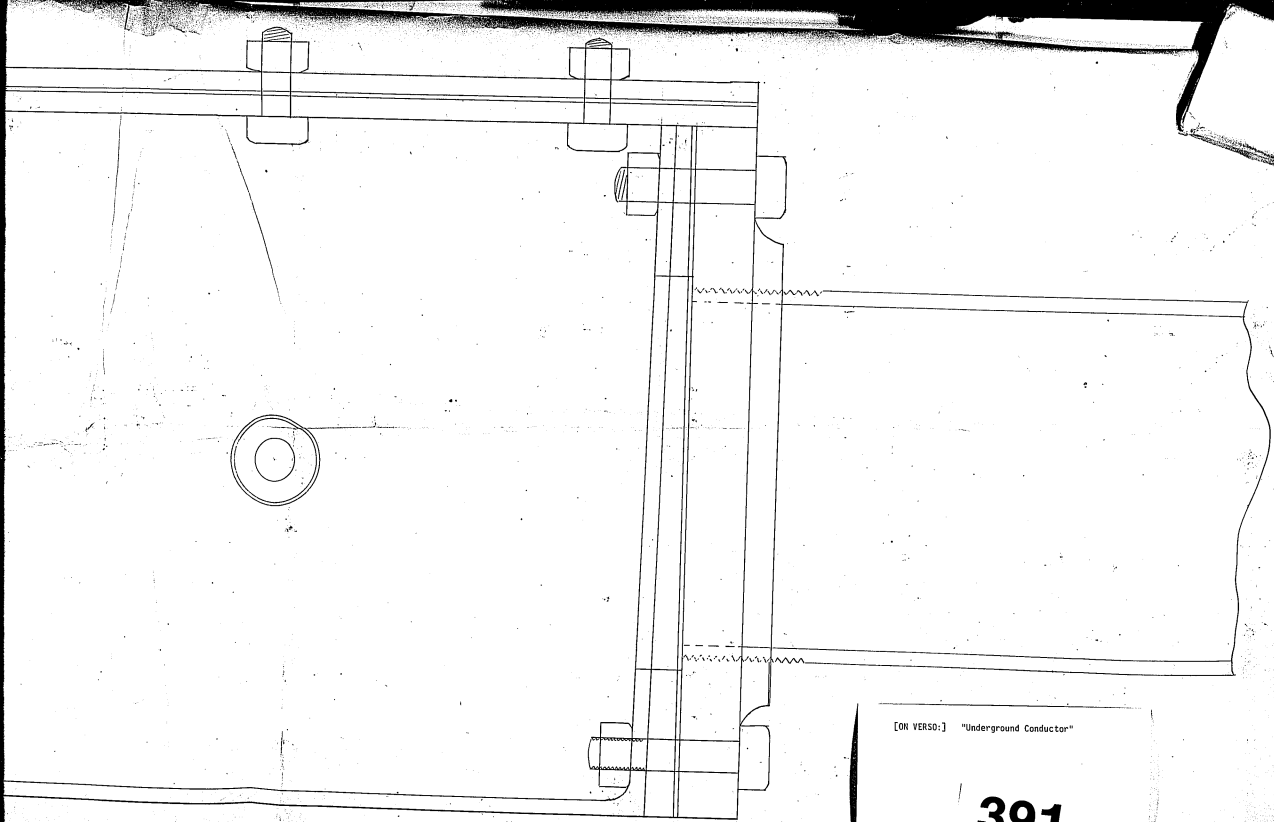


The image shows a technical drawing of an underground conductor assembly. It features a vertical central shaft with a threaded section at the bottom. Two horizontal lines, representing conductors, cross the shaft. The upper conductor has a wavy break line, and the lower conductor also has a wavy break line. At the top of the shaft, there are two horizontal bars with nuts and washers. On the right side, there is a circular detail with concentric circles. The drawing is on a page with some physical damage on the left side.

[ON VERSO:] "Underground Conductor"

391

[CONTINUED ON THE NEXT FRAME]



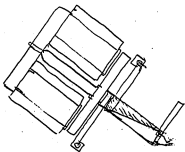
THE REDUCTION RATIO FOR THIS DOCUMENT IS 16:1

[ON VERSO:] "Underground Conductor"

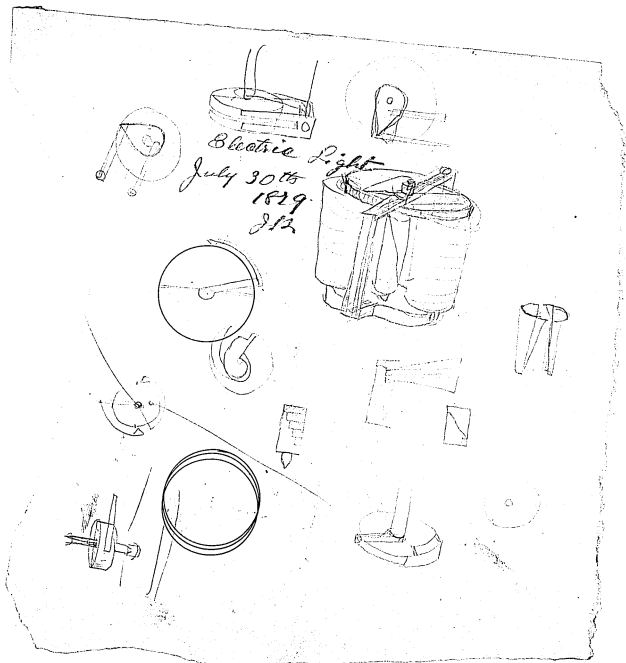
391

[CONTINUED FROM THE PRECEDING FRAME]

Scientific Light July 29th 1889
J. M. Munn

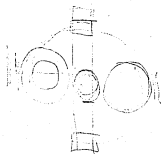


392



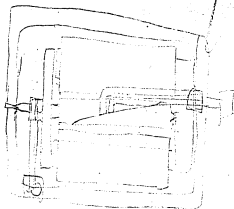
Electric Light
July 30th
1829
J.S.

393



393

16

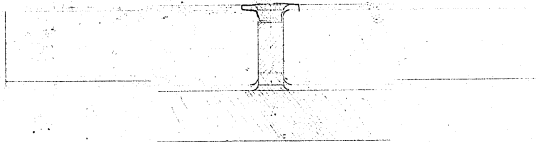


393

B.L.

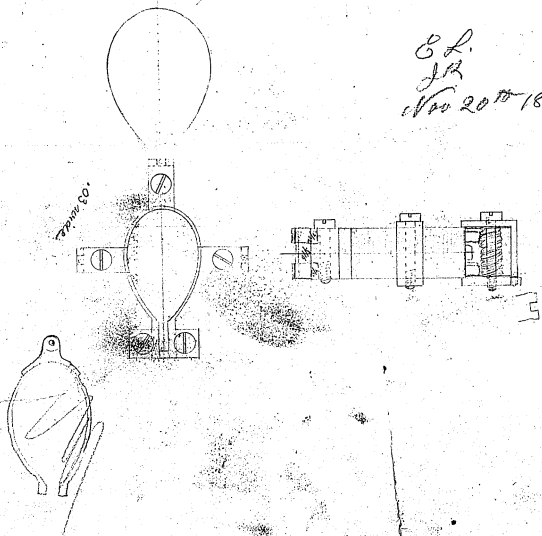


Aug 20th 29
J.R.



394

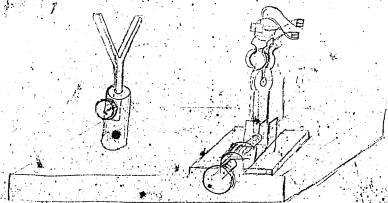
C.L.
J.R.
Nov 20th 1829



395

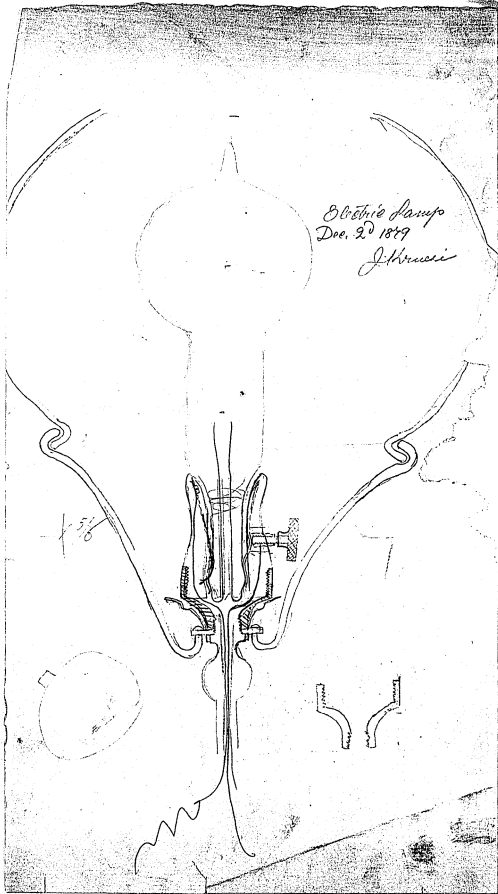
Electric Light Dec. 1st 39

Cheney



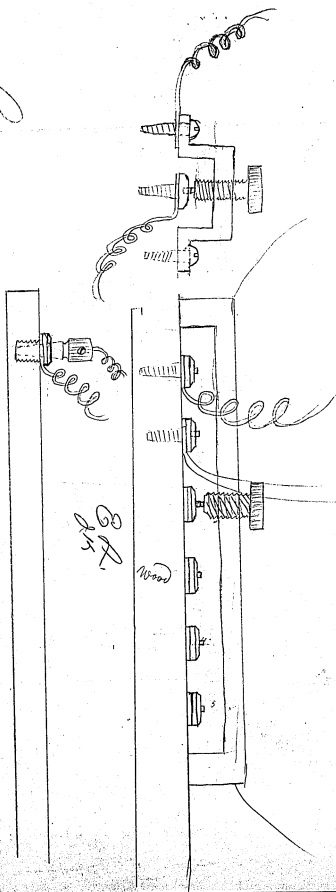
1939
7-43

396



397

8 P. 205-16 49
J. J. J.

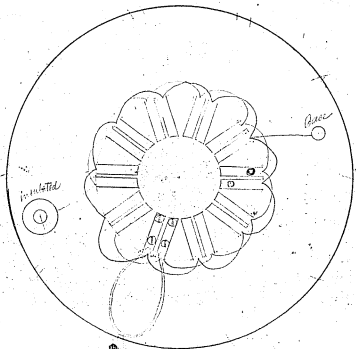


8 P. 205-16 49

398

8 | 70.0 | 122
8
2 0

Electric Light
Dec. 15th 1919
J.H.



400

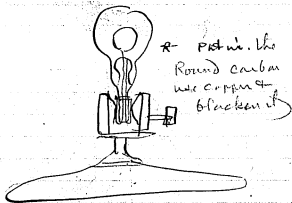
T. A. EDISON.

Menlo Park, N. J.,

Dec 27, 1874
JK

Kreuzer

Make me a holder & put
Lamp in for model.



get them by for Wilbur
we will call Saturday
night 7.30 P.M.

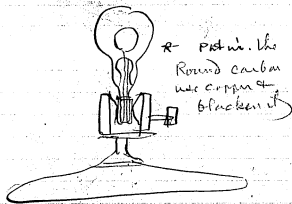
T. A. EDISON.

Menlo Park, N. J.,

Dec 27, 1877
JK

Kreuger.

Make me a holder & put
Lamp in for model.

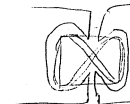
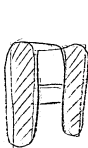
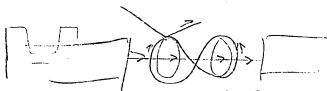
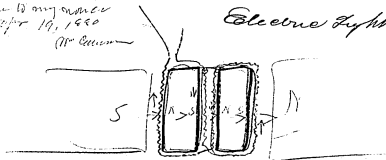


get it ready for Wilbur
who will call Saturday
night 7:30 P.M.

401

This came to my notice
again Apr 14, 1950
1st Comm

Electric Light



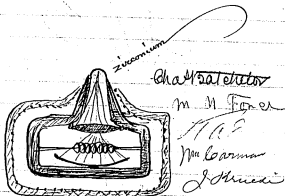
1st Comm
1st Comm
Chas. Hatcher
M. H. Force
J. H. H.

402

T. A. EDISON.

Menlo Park, N. J., _____ 187

Electric Light



came to hand again
Apr 19, 1850

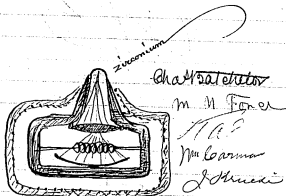
W. C. C. C.

403

T. A. EDISON.

Menlo Park, N. J., _____ 187

Electric Light



came to hand again
Apr 19, 1850

W. C. C. C.

403

Clay

Burned by me Apr 17, 1880
-think this is at least 1 year back

Pure clay contains neither iron, sand, nor carbonate of lime, if it burns yellow it shows iron, increased heat burns out iron -

variation in shrinkage 14 to 31 per cent in surface. The capacity or water contents between 20 & 43 percent

Clay may be burnt so hard as to give sparks when struck with steel,

Pure clay. Silicate of alumina is by itself infusible, but fusible with lime, $FeOx_4$ or CrO_3 .

~~Kaolin fire clay~~

to prevent great contraction mix with powdered burned clay -

Pure Alumina - (10) Oxide of aluminum.
in anythel - I have some,

infusible at all temperatures under
that of the H_2O pipe, cannot be
scratched with file after cooling -
at H_2O pipe. Melt. to transparent globules,
which assume crystalline structure on cooling

Good Alumina Concretes. See 122.
Mitchell. book by Crank

Lamp - Notes,

Lutes or cements for Lamp Glazes,

Parkers -
Good clay, 2 sharp wash sand & horse dung, 1
intensely mix, afterwards thoroughly tempered
like mortar,

Watts - powdered Cornish porcelain clay
mixed to consistence of thick paint with 1/2 lb of borax
2 oz borax to paint hot H₂O,

Roman Cement,

Plaster Paris mixed with weak glue, milk, or
starch water -

These ~~lutes~~ 3 last lutes stand dull red heat
they be rendered perfectly impervious to
gaseous bodies by being smeared over with oil or a
mixture of oil & wax.

Another stands 500 F.

Lime and or almond meal, mixed to consistence of
paste with H₂O, milk, lime H₂O, or starch paste.

Lime & Egg Cement:

Just suff quant H₂O to added Quicklime, to reduce to dry powder which mixed well & rapidly with white of Egg. (which) with the sim vol of H₂O. mixture spread immediately on lime & applied to part then provided with quicklime from good cement, H₂O flexible, main defect.

White Lead mixed with oil,

Clay Lute, (from day / see p III. Mitchell
Manual by Crocker.

Beales Cement.

Chalk 60, lime & salt, 20 each. Sand 10.

Iron dust & blue sand clay 5 each. ground & calcined.

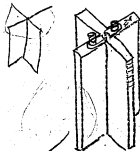
Oxychloride of Zinc Cement.

in sol chl Zn, of 1.49 to 1.65. S.g. dis 3 pe
borax or sal am: then add ox zinc which brown heat
andness until mass proper consisten, then cement become
hard as marble, may be cast in moulds like plaster par

Alu

E 94

Resonance 17



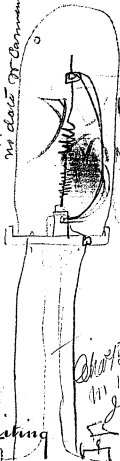
408
16

407

408

407
16

Apr 19, 18 50
appears to have
no date of Cannon

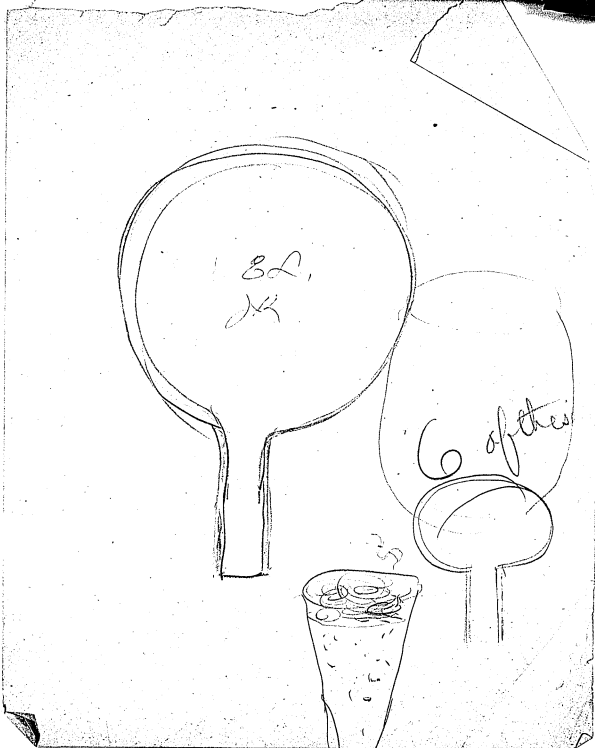


Charcoal sketch
11/11/50
Cannon

[Signature]
Cannon

407

408

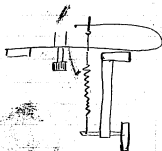


[ON VERSO:] "To hand Apr 19, 1880 Mm Carman"

409

Wise, put on new spiral in
diaphragm as

In the spring one make the
little spring that is fastened to
the stem, at least 1" longer in
order that the you will have to
make a ~~piece~~ ^{piece} ~~bracket~~ ^{bracket} for it bent down
into which the adjusting pin goes
and the other adjusting screw for
plate must have small head



410

Wise
Design the thick spring
& Iridium instrument very strong
and solid as it will be shown
right along to people coming
here. Batchelor

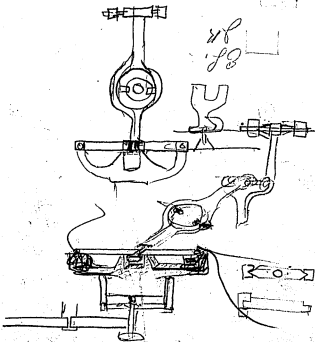
Wise put the spirals again
in these two instruments
as we want them to compare
with others we use

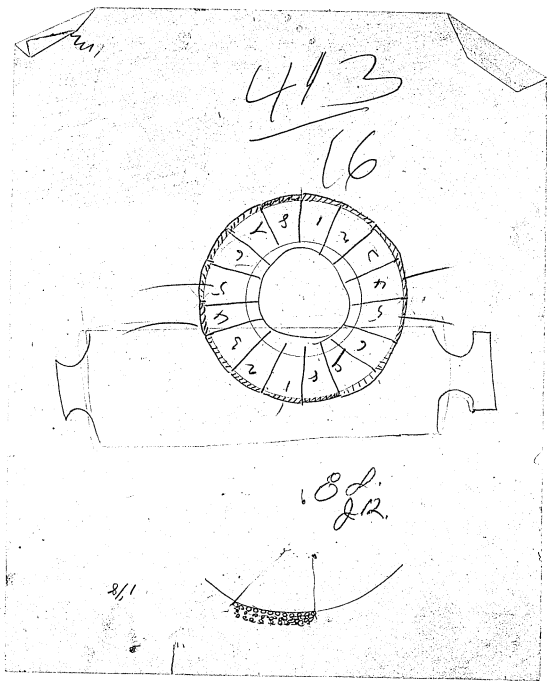
I have taken six of your
small books for some
of my work

411

[ON VERSO:] "To hand Apr 19, 1880 Wm Carman"

412





413

$$\frac{018}{072}$$

8

$$\begin{array}{r} 75 \\ 4417 \\ \hline 1000 \end{array}$$

7.00

$$\begin{array}{r} 5.327 \\ 5.023 \\ \hline 5.35 \end{array}$$

$$\frac{65}{70} \div 75$$

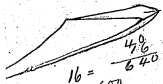
$$\frac{65}{70} \div 075$$

60.

04417 16 Crk
4417



2' x 7054



$$16 = \frac{48}{640} \div 075$$

$$\begin{array}{r} 2.125 \\ 7.125 \\ \hline 10.625 \\ 2.125 \\ \hline 2390625 \end{array}$$

$$\begin{array}{r} 275 \\ 275 \\ \hline 575 \\ 5625 \end{array}$$

5625

$$\begin{array}{r} 04417 \\ 2650200 \\ \hline 2.650200 \end{array}$$

$$\begin{array}{r} 75 \\ 375 \\ 375 \\ \hline 5625 \\ 1000 \end{array}$$

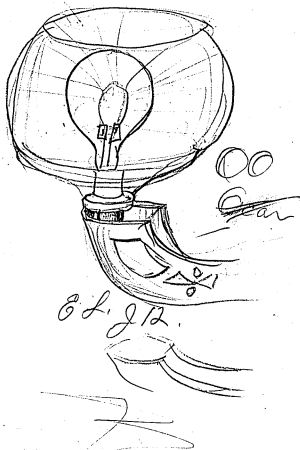
$$\begin{array}{r} :075 \\ 375 \\ 525 \\ 0-0-0 \\ \hline :05625 \\ 7854 \\ 2500 \\ 2500 \\ \hline 39375 \\ 044178750 \end{array}$$

$$\begin{array}{r} 75 \\ 25 \\ \hline 590 \\ 1590 \\ \hline 1880 \end{array}$$

1

$$\begin{array}{r} 2165 \\ 2139 \end{array}$$

19118
 2650200
 2.650200



[ON VERSO:] "This drawing to my notice
Apr 19, 1880 Wm Carman"

414

T. A. EDISON.

Menlo Park, N. J. _____ 187

W. C. C.

Also on diaphragm one
put in stronger spring
and put on to the rubber and
under the cork a piece of mica
1 in in diameter & slipper d
up.

Fix up the six spiral one
with screws top and bottom
and make spring a little
shorter so when hot they
bend a little.

We want them screwed to
plates top & bottom because
they give support in places
where they are hooked on

[ON VERSO:] "To hand Apr 19, 1880 Wm Carman"

415

Electric Light

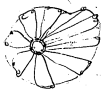
This memorandum of

Chas. Batches

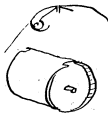
311 N. Park

New Orleans

J. K. K.



display
like the Bantler Membrane



Specimen 7474

Platinum notes.

1860 to 1860 Melt!
Carbide, frequent

W. J. Johnson
N. Carreau

Platinum with Carbon, Silicon, or Sulphur greatly lowered
in fusibility =

Spec. Density varies 21.0 to 23.0 Watt - 21.25 Hammond, drawn 21.4, thick
thin wire ~~21.5~~ 21.5 (Wallerstein)

Melting point 1460° ^{to 1450°} (Dewille) -
sharp from fusion 21.15, Dewille, 1874

Fuses in Oxhydrogen Bloscope, Watts, Volalt, & Dupre's
with semi. N. T. M., absorbs oxy unfused state (Dewille & Dewey)

Color silver white,

Wallerstein

Does not oxidize any temp. After not attacked by any strong
acid - Dissolves by Nitro-muratic acid, Corroded by heating in air with, Caustic
alkali or alkaline earths, emergence from iron oxide, which unites with alkali
May be drawn in wires as fine as spider web. by coating
with silver & drawing two together, dissolving silver by H acid -

Platinum acted upon by the Caustic alkalis:

Fuming Sulphuric, free chlorine, alkaline sulphides,
phosphoric, Magnesium metals, & readily reducible oxides,

Manufacturers, U.S.A. - Boston - Pa. H. Raynor. N.Y.

Platt. & Co. N.Y. London Johnson Matthey & Co

N. Carreau at Hanau. Freres Chapuis, Desmoutis
& Quennessen, Godart & Labordenave, Paris)

Exercise Eight

Very thin wire may be melted in common blow pipe.

Platinum frequently contains Barium or a combination of other metals (Kraut) Osmium + Silicon (Watts)

Atomic weight. 197.4 - Pt.

P. C. E.
McLanahan
M. M. Jones
J. H. Jones

Welds like Iron at high temperature

wire 2 mm dia breaks with weight. 124 Kilograms

Expands by heat less than any other metal

Unites with most metals which are more fusible than Pt itself
Antimony arsenic, Bismuth, Barium, Cadmium, Cobalt, Copper, Gold, Plat metal, Lead, Mercury, Molybdenum, Nickel, Palladium, Palassium, Silver, Sodium, Tin.

Harder than Copper Ductile than iron
Exceeds all other metals in tenacity except Cu & Fe
after Gold & Ir most ductile all metals,
alone it may be drawn out wire. 1940 ft
with Ar Et $\frac{1}{30000}$ in ^{broken out} thin like Gold leaf

Electric Light

oxides of Ar. among Te Bes Zn Cd. Sn Pb
Cu & Ar. Especially if any sub be present
that will combine with the O. of these oxides

Perfect welding requires white heat but
they adhere at red heat

triangles of Pt. used to ignite candles in gas flame
become gray & brittle, E.H. under Micro
show lat ^{conspicuous} cracks, penetrat. deep & deep &
become more open or as it were spongy until finally
we break !!!

W. H. B. B. B.

M. N. B. B. B.

Way back somewhere in 1878

St. Carron

Apr 19, 1880

419

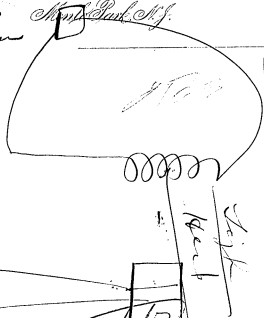
Laboratory of
Thomas A. Edison

Electric Light

found April 19, 1850
Mearns

West Park N.Y.

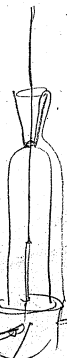
187



West
Mearns

West

Electric Light



1850

Kings
don't make this
but piece of paper
copy it

West Park N.Y.
Mearns
1850



421

Course to my notebook - this 19 May after 1850

Mearns

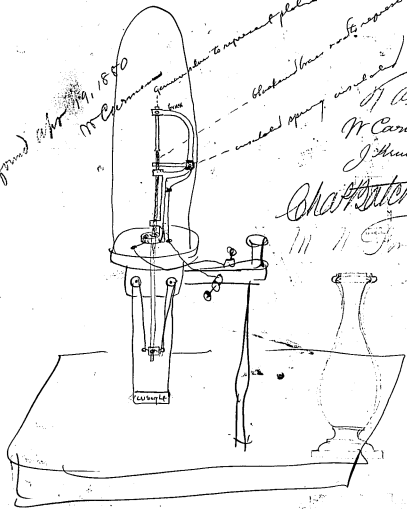
Chart
Mearns
1850

420

John F. ...

Electric Light

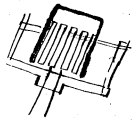
found Apr 19, 1880
W. C. ...



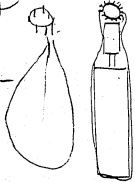
W. C. ...
J. ...
Chapman
M. M. ...

423

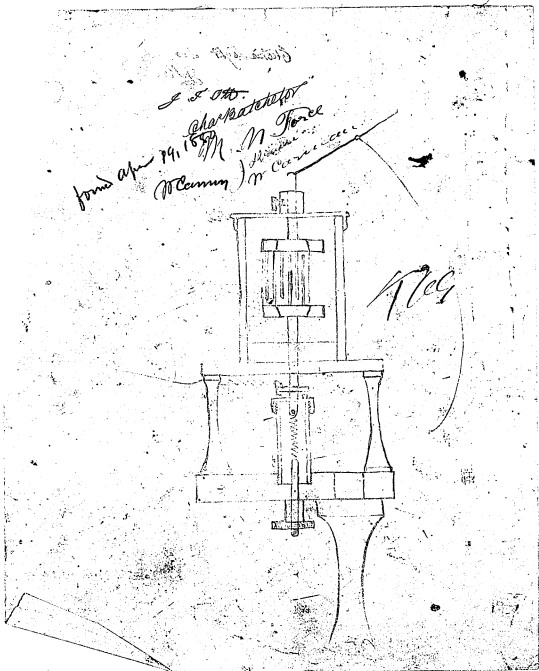
Electric Light
found Apr 19, 1880
W. C. ...



Chapman
M. M. ...
W. C. ...
J. ...



422

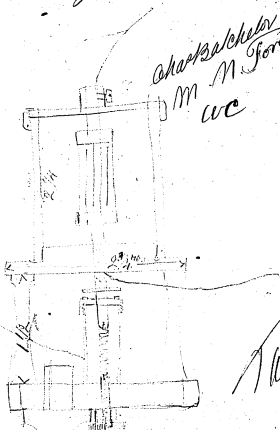


424

Chrome Light

J. H. ...

*Charles Seckler
M. M. Force
WC*

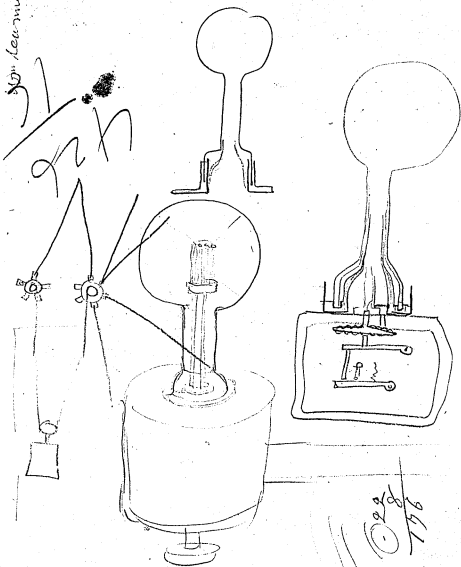


TR

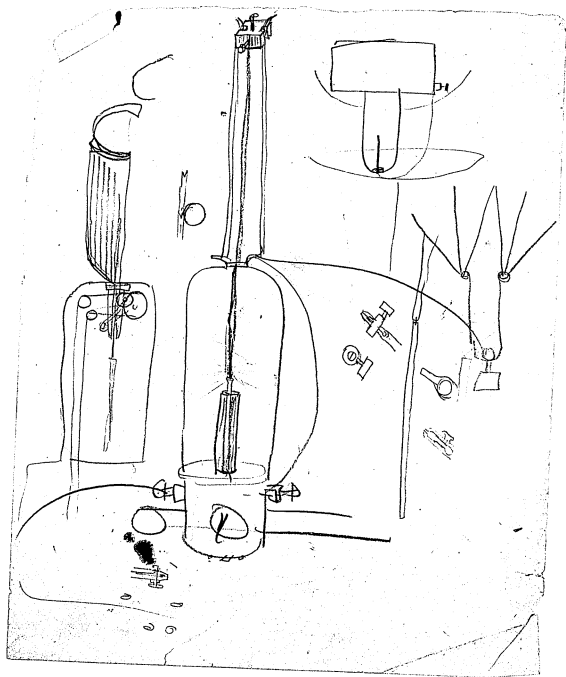
[ON VERSO:] "To hand Apr 19, 1880 Wm Carman"

425

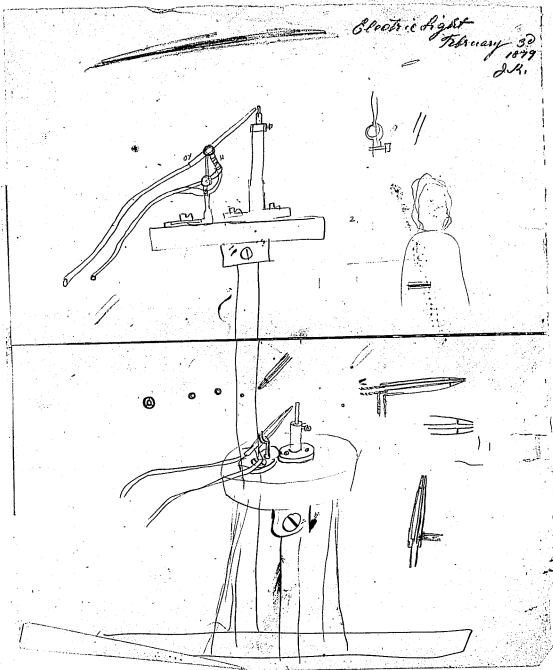
70 Hand Paper 19, 1880
Don't learn



426

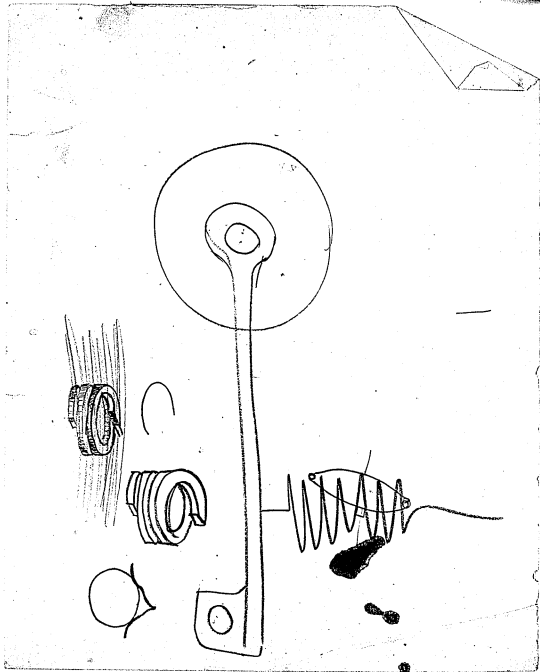


426



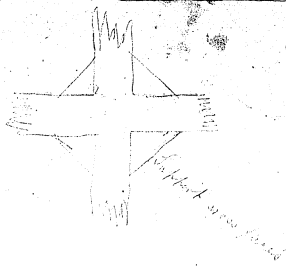
[ON VERSO:] "To hand Apr 19, 1880 Wm Carman"

427

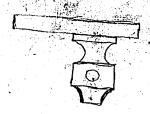


[ON VERSO:] "To hand Apr 19, 1880 Wm Carman"

428



Handwritten calculations:

$$\begin{array}{r}
 144 \\
 128 \\
 \hline
 16 \\
 15 \\
 \hline
 31
 \end{array}$$


Handwritten text in a box:

Handwritten text in a box

Handwritten signature or initials: "E. L. J."

Handwritten text:

35 Mr. No. 22 Currier

Handwritten notes:

10 inches 5 inches

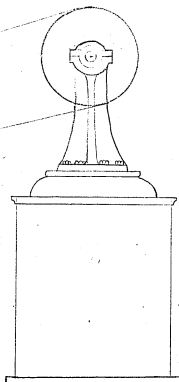
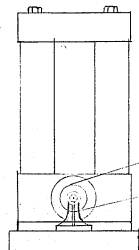
Handwritten notes describing dimensions and materials.

B.L.
Photo exp.
JK

18" on top
" " " " 3/2"

3.5 lbs of coal per 1000 hours

1. 18 ins. pressure 4 in. face
1.4 base
33 1/2 of 4 ins
single bolt

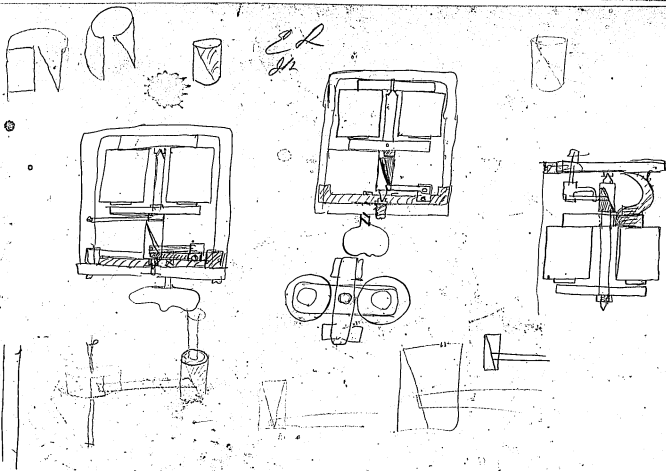


430

To find out
Mr. Lawrence

430
16

430



[ON VERSO:] "To hand Apr 19, 1880 Wm Carman"

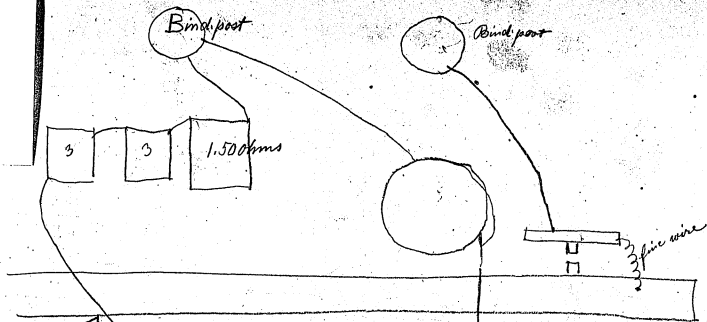
431

- E.L.*
2/5
- I Take out wheel & put a magnet on its place do
 - II Put self starter on bottom do
 - III Put brake springs on a pellet
 - IV Put an extension on shaft for
 ✓ a cap like Phelps Governor

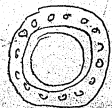
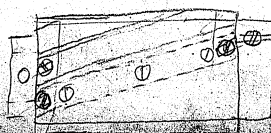
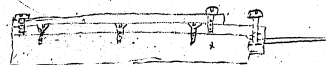
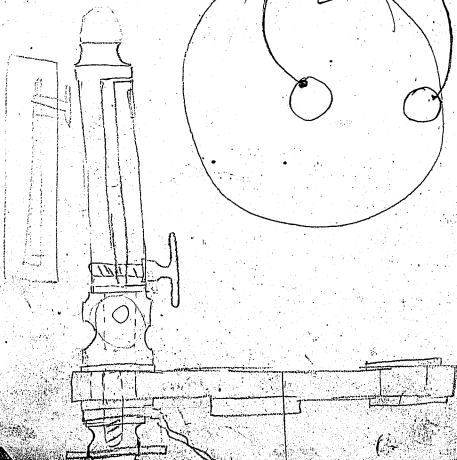


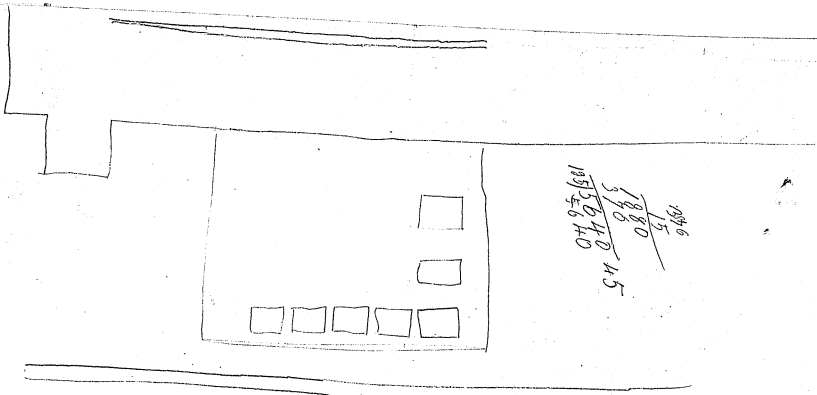
432

433



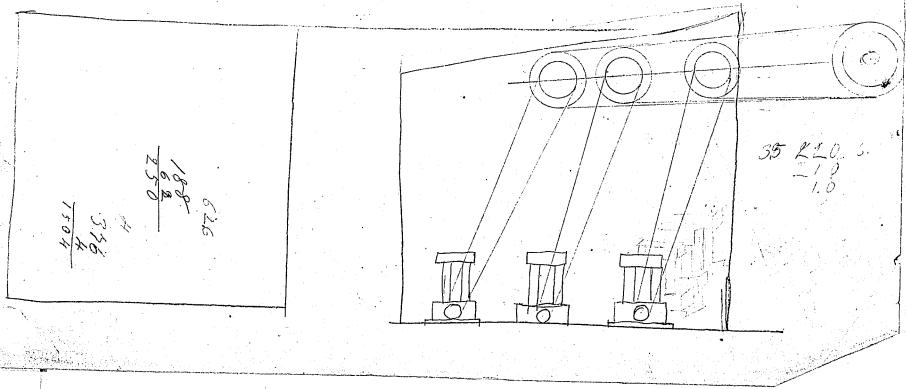
E. P. meter
J.P.





$$\begin{array}{r}
 1996 \\
 - 15 \\
 \hline
 1980 \\
 390 \\
 \hline
 1989 \\
 5640 \\
 \hline
 45
 \end{array}$$

82.



$$\begin{array}{r}
 188 \\
 68 \\
 \hline
 256 \\
 1504 \\
 \hline
 346 \\
 4 \\
 \hline
 4
 \end{array}$$

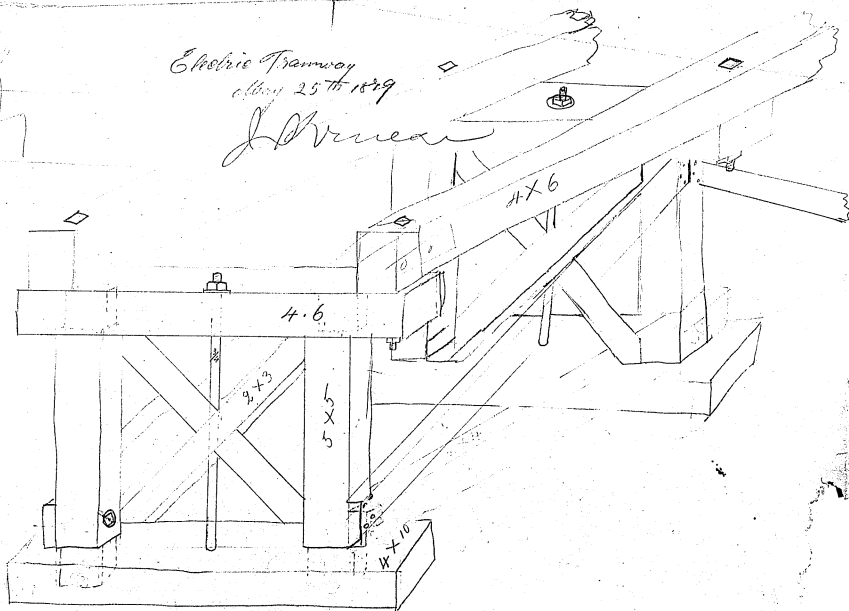
67.6
 97.6

35 K.L.O. 6.
 - 1.0
 - 1.0

47

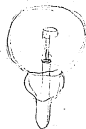
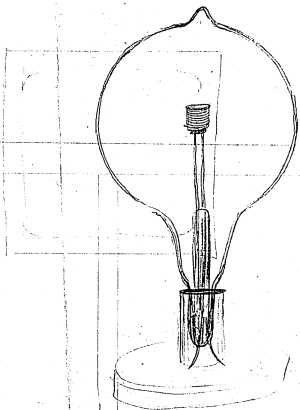
Electric Tramway
May 25th 1879

J. Bruce



435

91
—
9 CH



435

OK thought
Nov - 13 - 78

Resis of Magneto Generators

Shattuck
Mr. Egan

	Weston	Little	Wallace	Lay	Wallace
Resistance including condy wires Machine still	$\frac{8}{10}$ ohms	6	ohms	16	ohms
ditto					
Machine running slow	$\frac{8}{10}$ ohms				

A Edison
Johnson

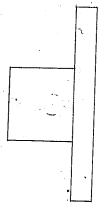
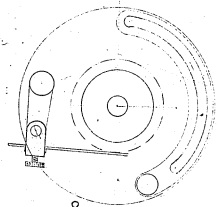
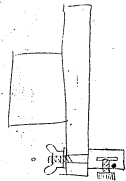
M. M. Force

~~Current~~ - ~~Current~~

No alteration when machines reversed

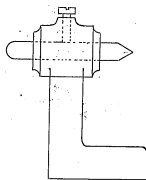
Resistance of Conducting wires

Bare Copper	$\frac{2}{10}$	ohms
Kerite	$\frac{5}{10}$	ohms

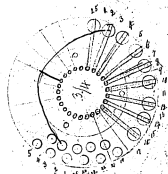
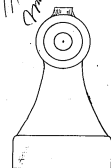


*Plan No 8
Feb 22 1899*

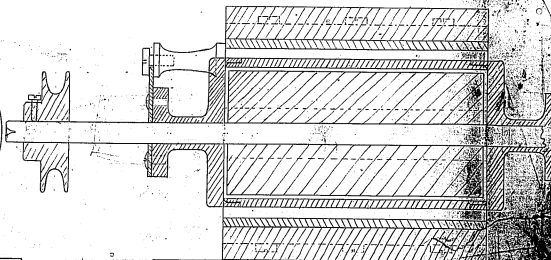
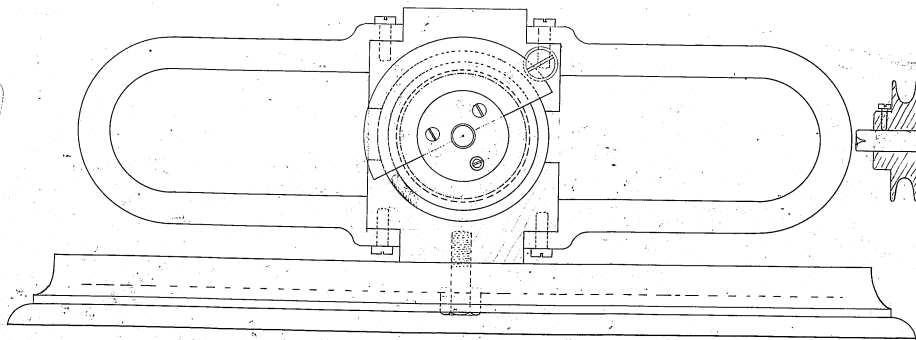
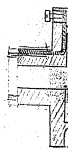
*21. Mue on the
Omnature
26. Mue on shoe*



*Shoekalsten
Jensen
Shoekalsten
M. N. Jensen
Comman*



Feb. 18th 1899.



437

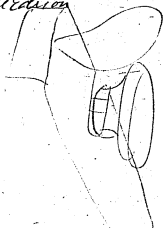
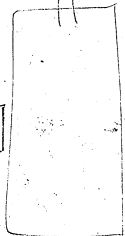
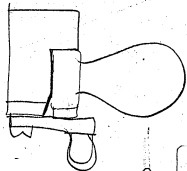
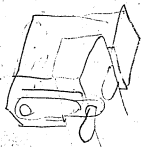
Notebook, Volume 17

This volume covers the period September 1877-November 1878. The notes and drawings are by Edison, Charles Batchelor, and John Kruesi, and they all relate to the phonograph. The volume consists of 187 numbered, unbound leaves.

Missing pages: 2, 7, 9, 16, 28, 32, 48, 56, 59, 96, 103, 150.

Facsimiles of some of the pages missing from this volume may appear in NS-77-003 and NS-78-007, Unbound Notes and Drawings.

Photograph
J. K. Reed
~~March 1904~~
Sharpeatcher
N. E. Reed



Patterns
2 flat plates $\frac{1}{4}$ thick

1

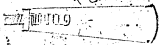
3

J. E. King
Chapman & Co.
Johns Hill
W. A. Force

2 Rubber B. 1. 1/2 - 1/2 - 1/2



2 Rubber



Cylinder 1 in Diam. 8 in long
Bottoms $\frac{3}{8}$ " $\frac{3}{8}$ thick

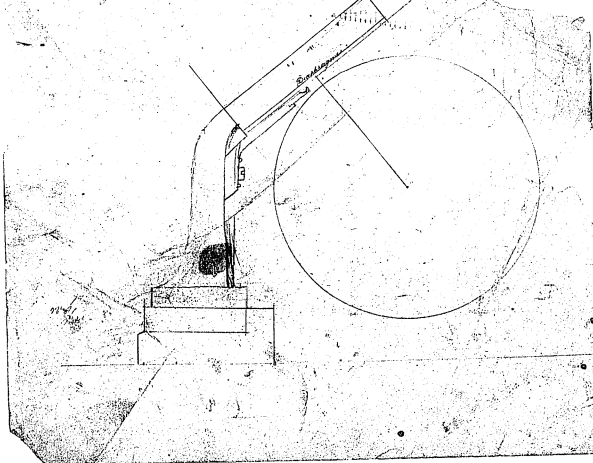
Arbor 1" \times 2 1/2 long

Arm $\frac{3}{8}$ thick 1 1/2 wide 3 3/4 "

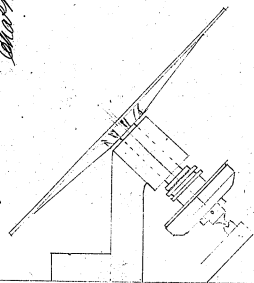
Cranks Curved to Cr. 1 3/4

Handle 2 3/4 long

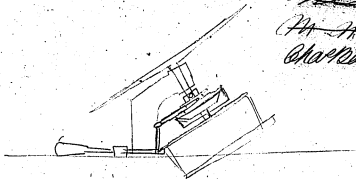
Bearings bottom to cr. 2 5/8 $\frac{3}{8}$ thick 1 3/8 \times 2"



~~John~~
John
John
M. H. Jones
Cha. H. H. H. H.



~~W. H. ...~~
J. H. ...
~~...~~
At the ...
Charleston

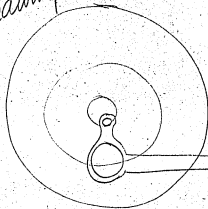


17/5

Duplicating process (see record in volume)

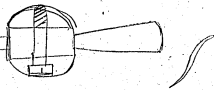
The frame is 2 1/2" or 3" wide & has a groove in
the foil is joined to the grooved plate ^{Char. K. Tenison}
~~The foil is joined~~ ^{M. M. Jones} and this frame is a plate
with a funnel shaped orifice & into this is
placed the hot plate paper & after it has
its liquid upwards the foil is taken from it
& it is then placed under a press where
pressure is provided with a platen equal in
size to the sheet, the platen is of polished metal,
four pins are in the frame holding the paper
these are the registering pins some which the
paper frame having the foil to be indented
is placed, a sheet of gallea parchment or
other non fibrous material is laid on the
foil & the press platen brought down
f & force the foil in the raised dots of the
paper thus taking a correct copy
The other plan is to substitute for
Electrotyped paper of Copper for the
paper

Make drawing -

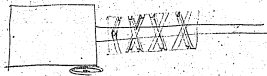
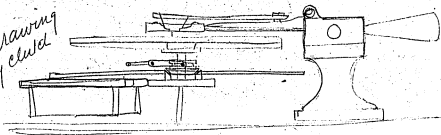


Walter Datchels

Madison
Johnson
Lynn
M. N. Ford



Make drawing
showing detail



Sept 7 1877

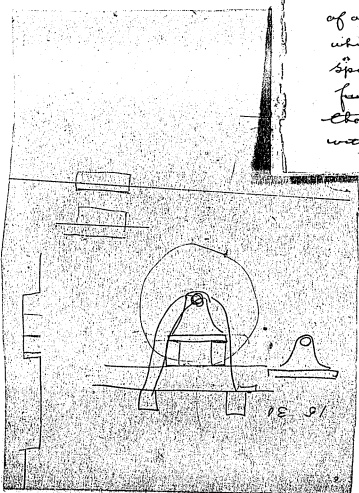
~~7a Edison~~

Edison Phonograph.

Wm. M. Foster
John M. Johnson
Chas. B. Johnson

An apparatus for recording automatically the human voice, and reproducing the same at any future period.

Mr Edison the Electrician has not only succeeded in producing a perfect articulating telephone which ^{performs} upon the line of the electric wire, ^{as} compared with the Morse telegraph. Comparative tests have proved to be far superior and much more ingenious than the telephone of Bell. but has actually and has been adopted ~~used~~ for use upon the 1300 private wires operated by the Field & Stock Telegraph Company of New York but has gone into a new and entirely unexplored field of acoustics which is nothing less than an attempt to record ^{automatically} the speech of a very rapid speaker upon paper, from which by ~~recess~~ ^{in years} he reproduces the same speech intelligibly afterwards ~~and~~ ^{and} features preserving the characteristics of the speaker's voice so that persons familiar with it would at once recognize it.



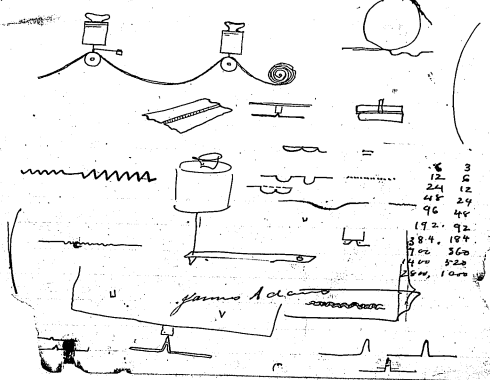
13

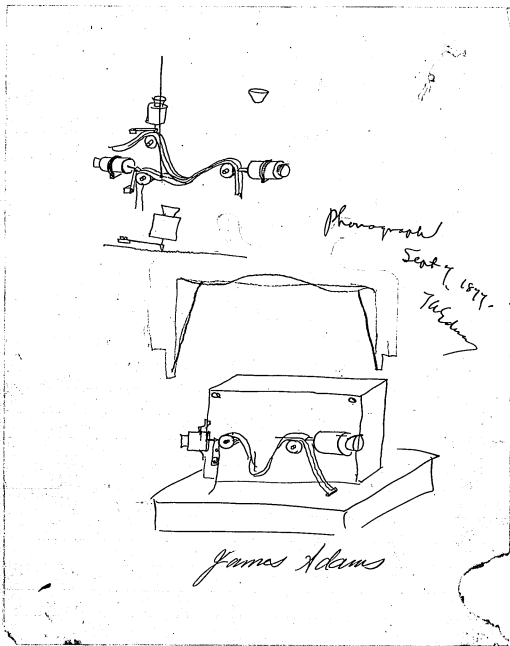
12

Photograph Sept 7 1877 W.S.

It would seem that so wonderful result
 as this would require elaborate machinery
 on the contrary the apparatus is ^{so} simple
 and yet is so wonderfully simple

I will endeavor to convey the principle of
 by the use of an illustration which although
 not exactly the apparatus used by Mr Edison
 will enable the reader to grasp the idea at
 once





Phonograph

September 7 1877

J.A. Edison

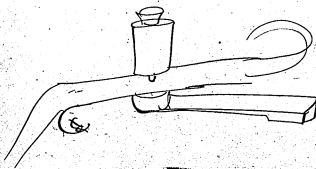
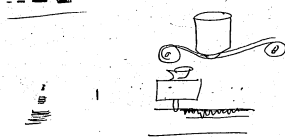
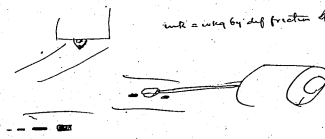
Charles Batchelor

James Adams

John Kruger

Wm. H. Lence

ink - wry by def friction



Phonograph

September 7, 1877
J. Edison

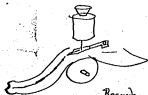
~~Charles~~ ~~Adams~~

James Adams.

J. Adams

~~W. Adams~~

~~W. Adams~~



Receiver

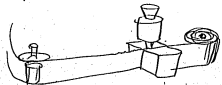


Rough paper - knock down
down side as through 2 or
3 small holes, 3 small holes, etc.



phonograph on a spring on
diaphragm makes light
shading marks which have
more or less distinct
Receiver worked by difference of
friction in the web.

Receiver worked by difference of
friction in the web.



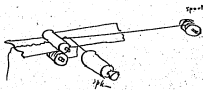
Edge embossed



Embosser



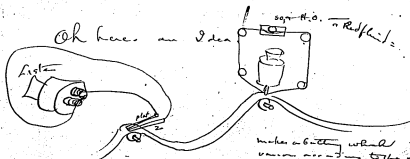
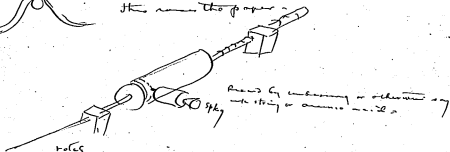
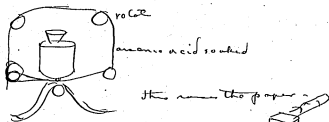
Embosser as shown
above the phonograph



Spool (the 2)

Ph magnograph

Sept 21 1877
J.A. Edison
Charleston
Illinois
Wm. M. Force



make a battery which
varies according to the pressure which
exerts upon the ink string covering
not finished =

Nov 23 1877

Phonograph

Wm. Emerson
John Russett
James Adams
~~Ed. Adams~~
M. M. Foxe

Improvements apply the Phonograph principle to make Doll speak sing Cry & make various sounds also apply it to all kinds of Toys such as Dogs Annals, fowls, reptile human figures to cause them to make various sounds to show Toy Engine imitation of Exhaust & whistles = to secure reproduction from sheet music both orchestral instrumental & vocal the idea being to use a plate machine with perfect registration & stamp the music out in a press from a die or punch previously prepared by cutting in steel or from an Electrotype or cast from the original on the foil = A family may have one machine & 1000 sheets of the music thus giving endless amusement I also propose to make toy music boxes & toy talking boxes playing several tunes & speaking several sentences also to Clocks

(2) Phonograph

Nov 27 1877
708

The same as above

and watches for calling out the time
of day or weather waking a person
for admission to a hotel & continued
by clockwork to attract attention of
passers by. I propose to make it loud
by building up or enlarging the
original vibrations or indentation
by laying them out & cutting in steel
or building up by electroplating, &
other ways. The method for preparing
a wheel or plate for toys is by stamping
or casting the same. If a wheel a band
is stamped & put around it.

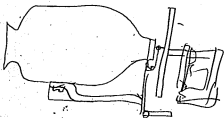
It may replace a man on a telephone
and a telephone man at either end
by holding the telephone to the
speaking tube or the receiving magnet
may be connected to the work
the air diaphragm, with toys or
apparatus in which only reproduction
is required the characters may either
be indented or raised.

⑨ Phonograph

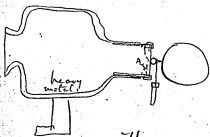
Nov 23, 1894
W.C.C.

For taking down recording when it is impracticable
for the writer to speak might in the tube
I propose to arrange a large chamber
of metal

Charles Taylor
James Adams
Arthur
1894
M. S. Ford



or to have the pencil belt



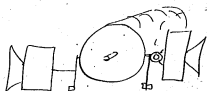
This is

This large chamber will record
more powerfully to a
voice at a distance than
a small chamber -

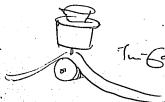
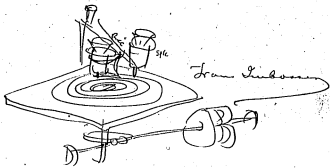
Photograph

Dec 3 1877
J A Edison
Chattanooga

Have tried lot of experiments with different thickness of tin foil. to the ^{James Adams} best material yet for recording. ^{Johnnie} ~~W. H. Force~~

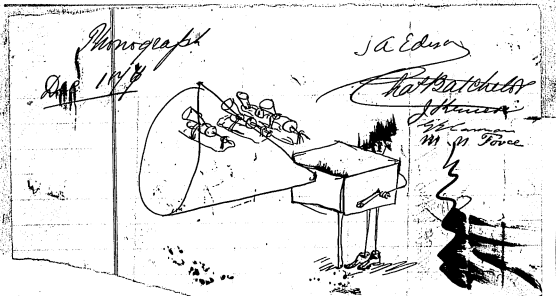


- This is better than
second =



The foil paper @ tissue labeled with
tin foil a

22



21

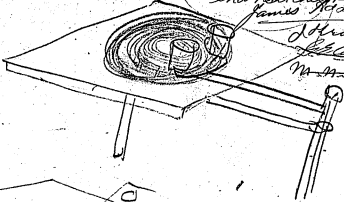
Phonograph

Dec 7 1911

*Charles K. ...
James Adams*

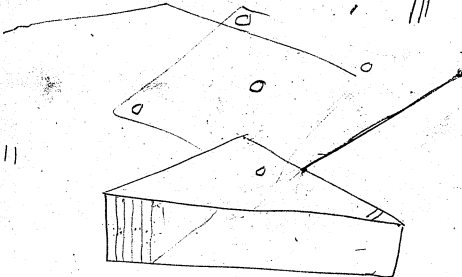
John ...

M. M. Force

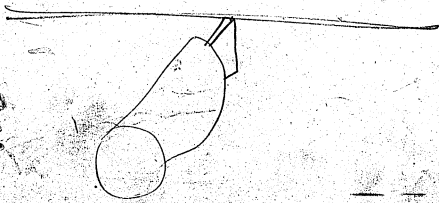


138

35



||||



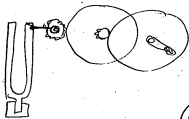
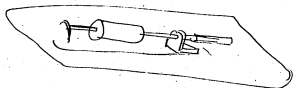
Phonograph

Dec 10 1877

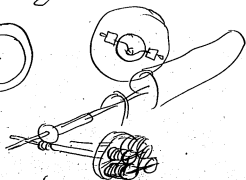
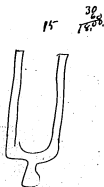
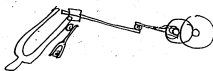
308

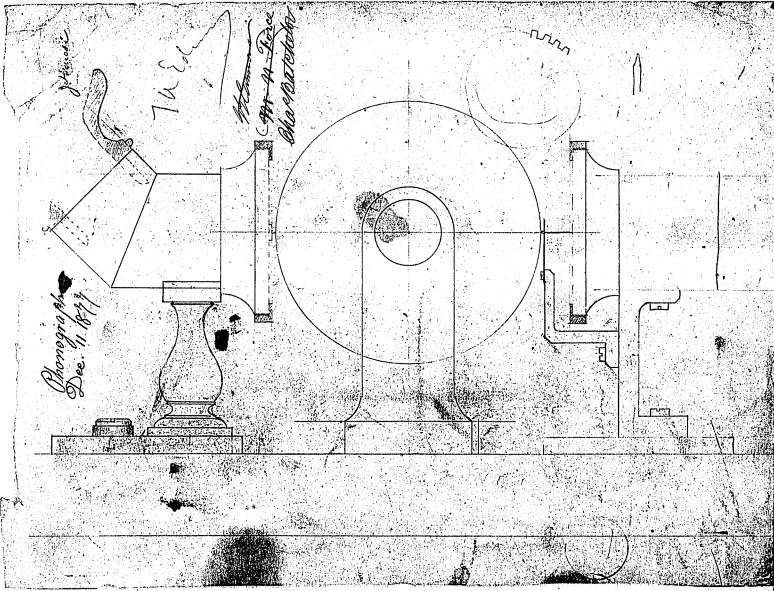
Johnson

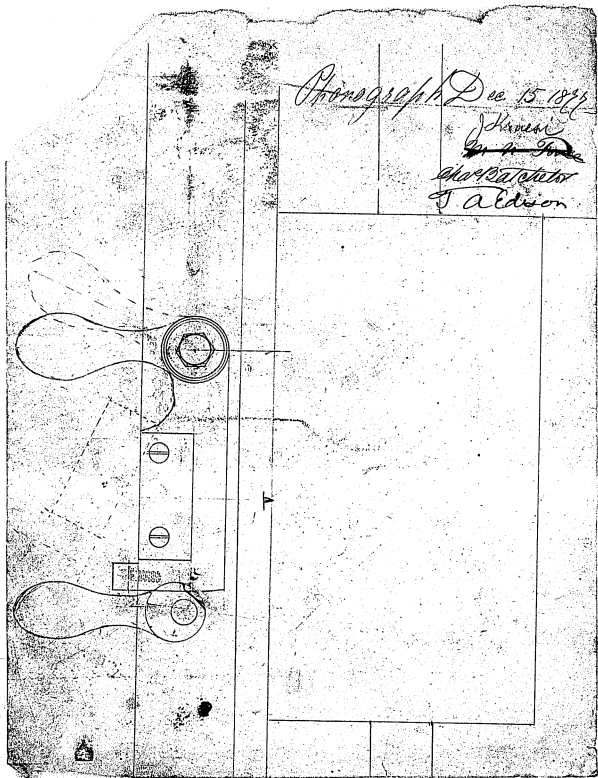
Chas. Ketcher
New York



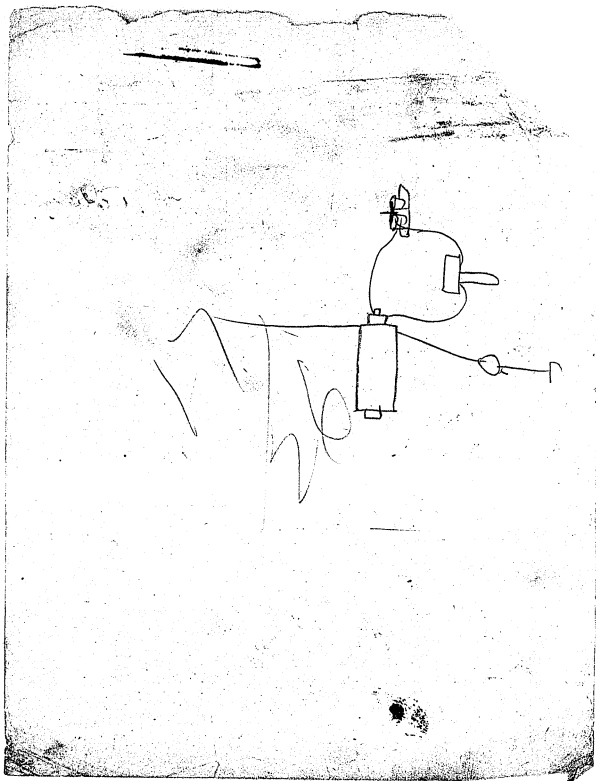
Thomson







26



26

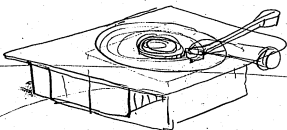
Photograph

Dec 23 1877

50th Street

Chas. S. Barrett

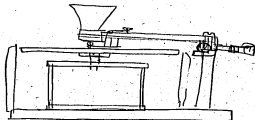
J. H. Russell



40.



25.

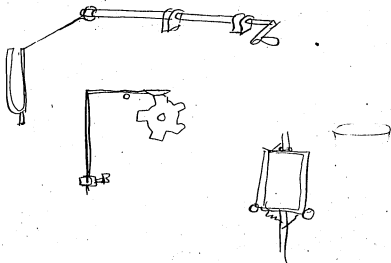


Phonograph

Dec 23 1897

J. A. Johnson

Charles B. Johnson
Johnson



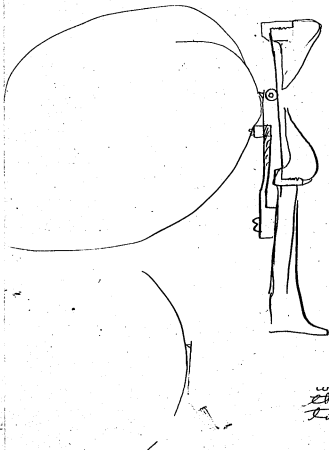
Phonograph

Dec 28 1875

J.A.E.

Chas. S. Satchler

Johnson



use a telephone

mouth piece

and arrange it so

that can replace

Mouth piece used

with the funnel

with the complete

Machine I propose

to so direct the plate

while rotating &

without stopping

clockwork or electric

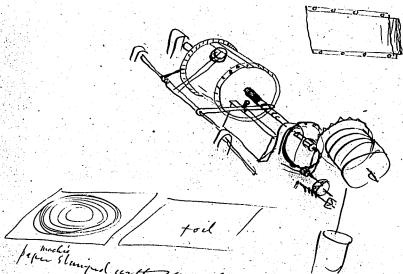
and provide the motion

with work to do equal to

that which is required

to rotate the plate.

Photograph Jan 1878
of W. E. Murray
Char. Watcher.
J. H. M. J. H. M.
M. N. J. H. M.



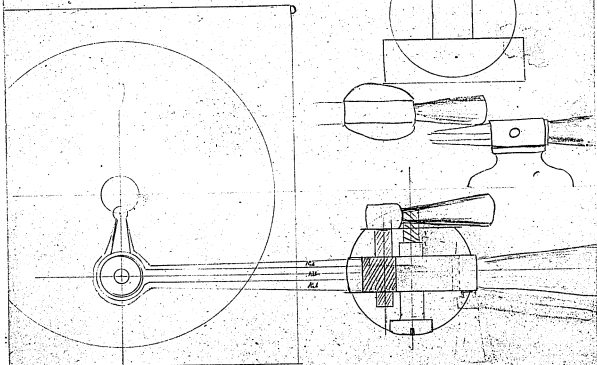
made
paper stamped with spirals in foil laid over them

Jan 12 1898

Phonograph
Plate and arm (sewed)
with aim to clamp arm down

Sharpshooter

T. A. Edison
Johnnie
H. J. Force



Photograph model

Jan 12th 1878

T. a. Edison

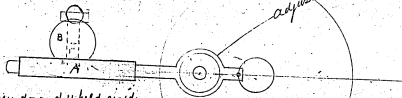
Chas. Satchel

J. Russell

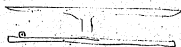
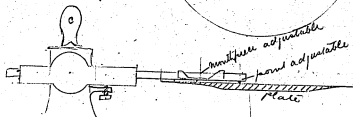
J. J. Co.

Edm. W. Bruce

adjustable plate



A cathode when down & is held rigid
B anode ~~is~~ kept arm and cathode
& is held in position when working
C handle

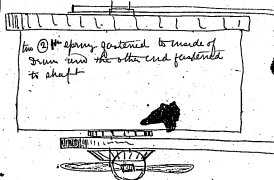
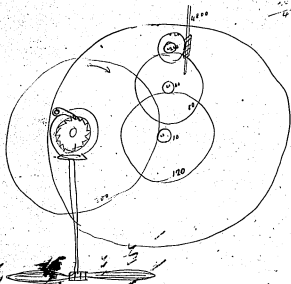


Phonograph

Jan 12 1878

J. A. Edison
Chas. Batchelor
Johnnie Johnson

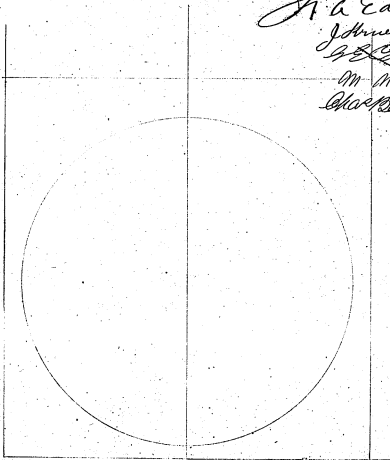
- Design the plate OK
" lever OK M. A. Force
" screw part OK
" clockwork OK
" winding arrangement OK
" stopping mechanism
" throwing out mechanism
" regulator



Photograph

Jan 12 1898

A. A. Edison
Johnston
25 C. W. W. W.
M. M. W. W.
Chas. W. W. W.



Photograph

July 23 1873

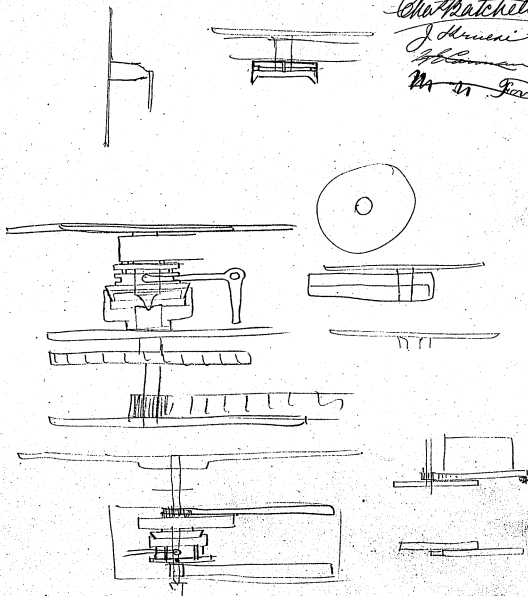
7th Avenue

Chattanooga

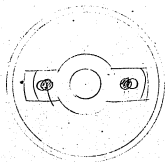
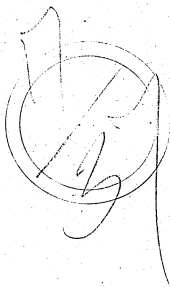
J. H. Hines

Edgewood

W. H. Force



5-18-73



Panorama

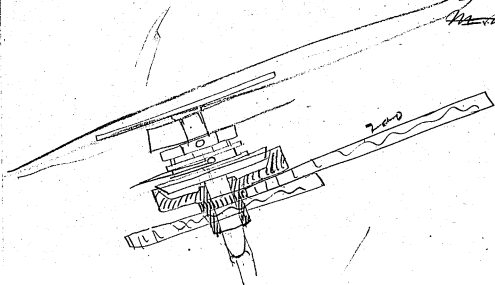
July 23, 1878

Talara

Chas. Batchelor

Johns

W. H. Force



Phungson

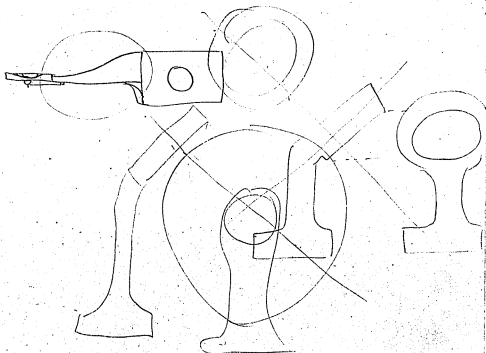
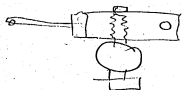
July 23 1870

7th Edition

Char. Bachelors

J. H. Merriam

M. A. F. A. C.



H

Photograph

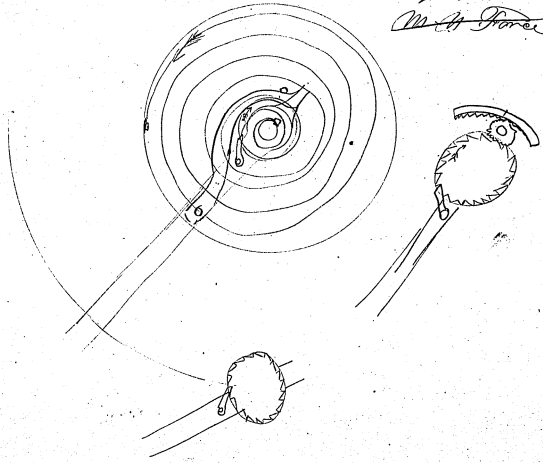
Jan. 23, 1875

Ta Ewa

Akai Patchlor

~~Johnnie~~

~~Johnnie~~
M. A. Force



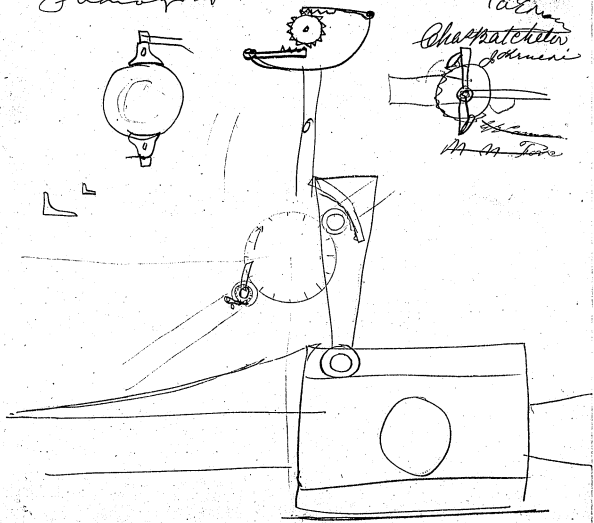
Photograph

July 23 1878

768

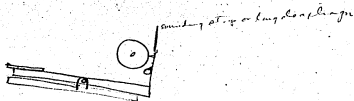
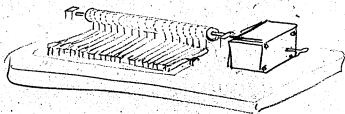
Charpachetier
Admiral

AA AA



Phonograph Apparatus

July 28th 1878
 J. A. Edison
 Menlo Park
 N. J.



Children's piano although useful as a new musical instrument for adults - a cylinder cast or otherwise with a note or rate of vibrations indicated around it in 50 or 60 places, is rotated by clockwork or other power so that as 50 or 60 keys the depression of any one causes a spring with a point into the path of one of the circles of indent. at the same time connect with a sounding diaphragm or board. The rotation of the cylinder gives the regular vibrations to the spring to give a note with each stroke and give a different note.

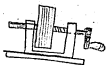
Photographic applet
Splay Boxes

July 25 1878

W. H. Edwards

~~W. H. Edwards~~
~~Edwards~~

W. H. Edwards



Double head screw
one head deeper than the
other would allow glass
one way. Hence bottom part
to support and other way
not to touch.

Phono -

July 29 1878

~~Charlatels~~

W. Edison

~~Edison~~

~~Edison~~

~~Edison~~

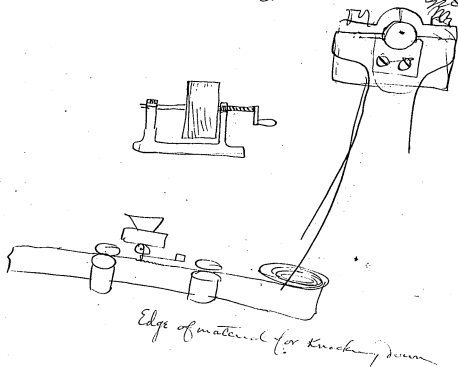
I propose as an alarm for various ^{of the force}
to have bands, cylinders or discs
drilled stamped cast etc with fine holes.
If arranged thus very close together having
the appearance of a musical note on the
phono - The hole however deeper - a spring
with point follows in & out of the
hole - Spring is connected to a diaphragm
or sounding board drum etc. The quick
rotation of the plate etc causes the
spring to beat the diaphragm in motion
producing a powerful, high, and piercing
scream or note, to trill I propose
to skip every 3 4 or 5 dots I can
also have several springs & several
Rows of holes like an index plate
springs making separate diaphragms or
an diaphragm this will give a
Composite tone =

" But I just tried it its ok. loud

Phonograph

Feb 2 1878

J. D. Adams
Chas. Batchelor
J. H. Mason
Wm. S. Paine
R. B. Taylor

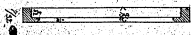
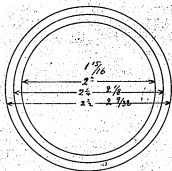


Answer edis

iron foil
iron point polarized
The induction will
will not disappear
vibrate by magnetic
attraction without
touching

Instrument for showing principle of
Edison's Speaking Phonograph
Feb. 24th 1878

Chas. Batchelor



The Cap for holding diaphragm

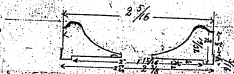
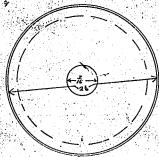
47

Sheet for showing principle of
Edison's Speaking Phonograph

Feb. 24th 1878

Chas. Batchelor

Mouthpiece



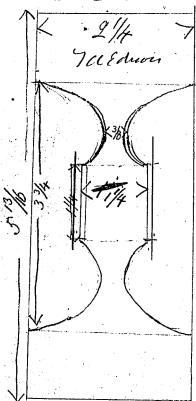
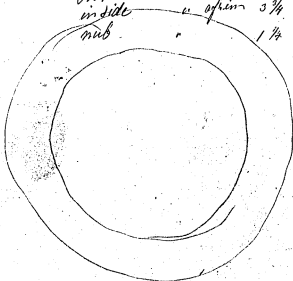
49

Photograph Fe. 9. 6th
1878

J. Bruce
~~John W. Smith~~

Chas. B. Hatchers

outside Diam. $5\frac{13}{16}$
inside " " $3\frac{3}{4}$
hub " " $1\frac{1}{4}$



171 = 80

A A Edison
Sub 8th 11/8

$$\begin{array}{r} 171 \\ - 80 \\ \hline 91 \end{array}$$

$$\begin{array}{r} 171 \\ - 91 \\ \hline 80 \end{array}$$

$$\begin{array}{r} 171 \\ - 80 \\ \hline 91 \end{array}$$

Monograph

$$\begin{array}{r} 80/537/0 \\ - 450 \\ \hline 37 \end{array}$$

Patelcelor

30 Johnson

$$\begin{array}{r} 300 \\ 150 \\ 150 \\ \hline 300 \end{array}$$

$$\begin{array}{r} 3701 \\ 1800 \\ \hline 1901 \end{array}$$

$$\begin{array}{r} 171 \\ 85 \\ \hline 256 \end{array}$$

6.20 M. H. Ford

$$\begin{array}{r} 158 1/2 \\ - 90 \\ \hline 68 1/2 \end{array}$$

$$\begin{array}{r} 314 \\ - 245 \\ \hline 69 \end{array}$$

$$\begin{array}{r} 330 \\ - 34 \\ \hline 296 \end{array}$$

$$\begin{array}{r} 20 \\ 12 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 314 \\ - 120 \\ \hline 194 \end{array}$$

$$\begin{array}{r} 194 \\ - 150 \\ \hline 44 \end{array}$$

Large Wheel 300 teeth diam 6.21 = 629
Pinion - 30 teeth diam .62 } = 70
Large Wheel 150 teeth diam 3.10 } = 318
Pinion 20 teeth diam .41 } = 49

$$\begin{array}{r} 300 \\ 150 \\ \hline 450 \end{array}$$

$$\begin{array}{r} 621 \\ 2 \\ \hline 310.5 \end{array}$$

$$\begin{array}{r} 62 \\ 150 \\ \hline 23.33 \end{array}$$

$$\begin{array}{r} 171 \\ 150 \\ \hline 21 \end{array}$$

$$\begin{array}{r} 171 \\ 150 \\ \hline 21 \end{array}$$

314 | $\begin{array}{r} 2000 \\ 1824 \\ \hline 176 \\ 2184 \\ \hline 2184 \\ \hline 0 \end{array}$ 6.27

Feb 13 1878

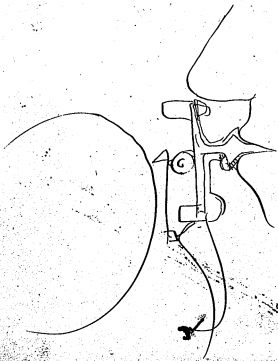
516 | $\begin{array}{r} 2000 \\ 1824 \\ \hline 176 \\ 2184 \\ \hline 2184 \\ \hline 0 \end{array}$ 6.27 643

J A Edson
 Chas Batchem
 J. H. ...
 M. H. ...



3.14 | $\begin{array}{r} 1500 \\ 1256 \\ \hline 244 \\ 244 \\ \hline 0 \end{array}$ 4.77 4.78
 284

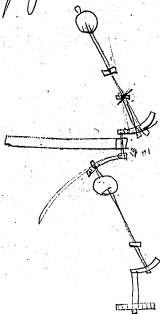
6.37
 478.1 63



Photograph

Feb 15 1878

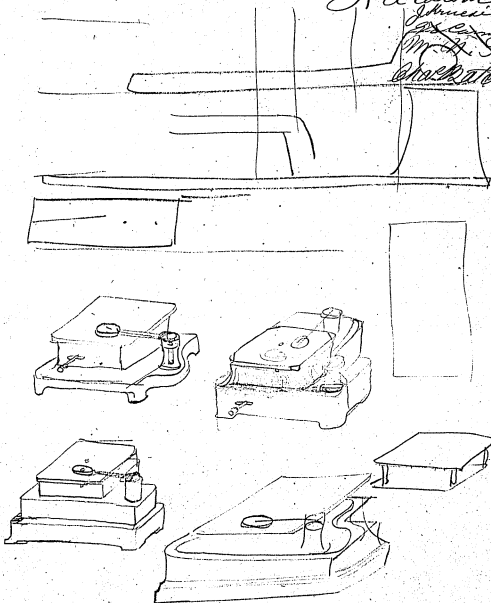
Charles Atterton
M. A. Force
J. H. Wood
T. A. C. S. W.



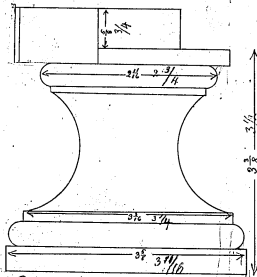
09

Photograph Feb. 15th 1878

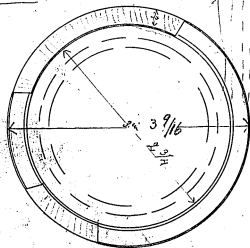
To a Edison
Johnnie
Mr. A. Rice
Charles A. Rice



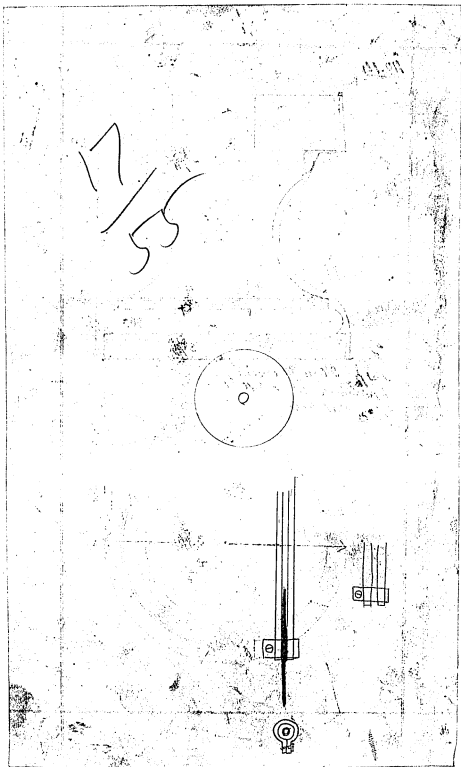
NO 14



Part for Plate Machine
Kenta Saw R. J. Feb. 16. 1917
Chorpatchem



J. K. Ueda

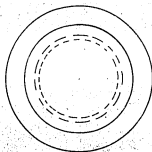
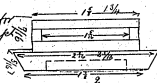


55

FROM THE LABORATORY OF

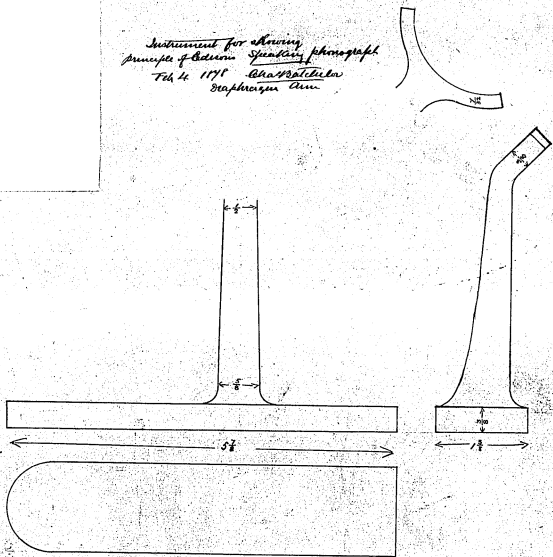
T. A. EDISON,
MENLO PARK, N. J.
U. S. A.

No 18
Removable Clutch for
Plate Photograph
Fit as with
Charbonnel



57

Instrument for showing
principle of action Speaking photograph
Feb. 11, 1898 Chas. B. S. S. S. S.
Staphroscopus Am.

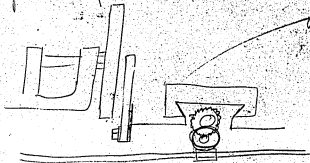


Monograph

March 11th 1878

To a friend
 Chat Bachelors

Spiral cutting machine



James Adams
 J. Adams 50
 Worm Wheel ~~4~~ 11
 m. m. Force
 H. M.

Take off rack wheel on lathe
 and make gear to run
 rack shaft by positive motion
 then gear up from worm wheel
 to brass screw on carriage axle
 throw carriage in back screw
 & set in by

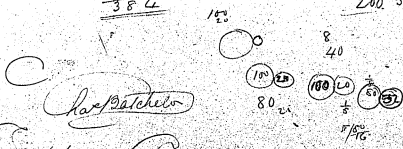
25

80
 20
 50

25
 200

$$\frac{48}{384}$$

$$\frac{44}{200} \frac{1}{54}$$



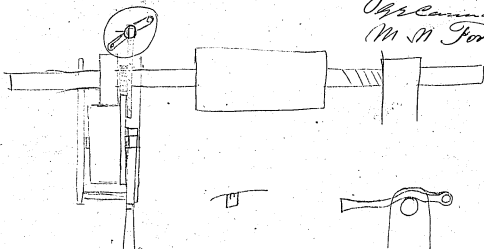
Chat Bachelors

Chat Bachelors
 Chat Bachelors

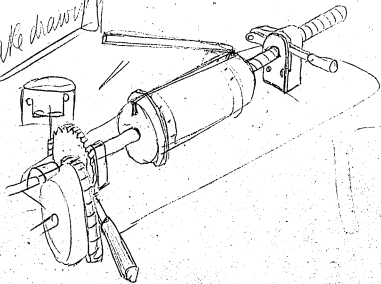
Speaking Phonograph

March 19th 1878

W. S. Gilbert
to a Edison
J. H. Mason
J. C. Currier
M. M. Force



Make drawer

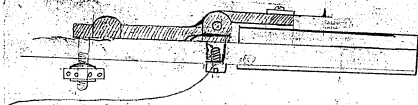
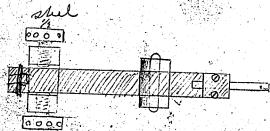


Phonograph March 20th 1878 J. A. Edison

M. N. Force

Assistant

J. A. Edison



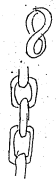
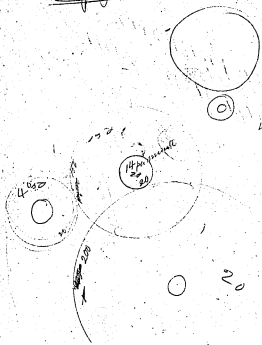
62

Speaking Phonograph

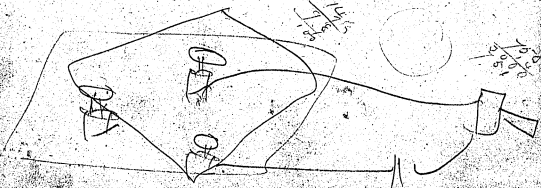
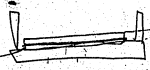
March 27 1878

To a Friend
 of
 M. M. Pierce
 Charlestown

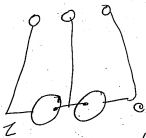
2 1/4
 5 0
 1 2 5
 3 2 5 0



20 1/2
 1 - 10 = 10 1/2
 10 1/2 = 10 1/2
 10 1/2 = 10 1/2
 10 1/2 = 10 1/2

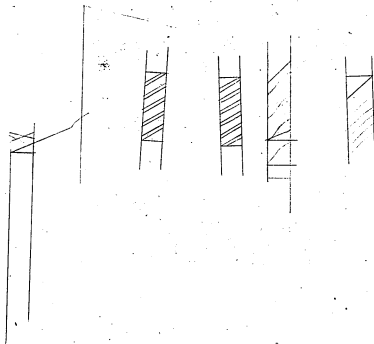


29
L



System
Should be updated
Dwell equivalent time cal

Photograph March 29th 1878
M n Force
Chattanooga
Tennessee

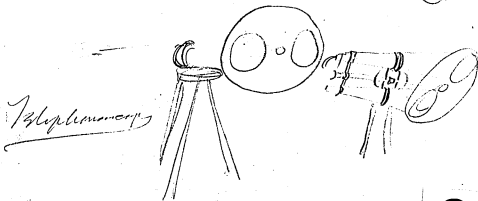
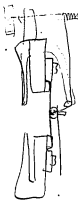
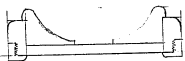
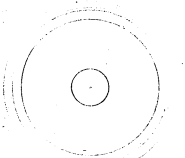


64

Photograph April 20 1877

Vol + Shinn

W. H. Fox Talbot
in n. Fox
J. A. Edison



Photography

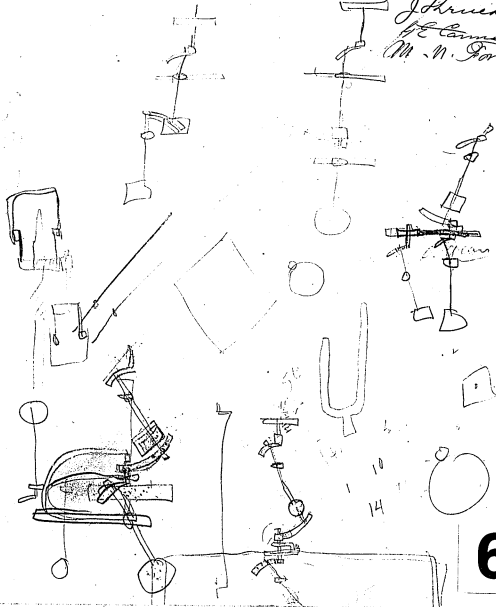
65

Photograph

April 9 1878

J. A. Smith
Chas. B. Bache

J. H. Russell
H. C. Cannon
M. W. Force



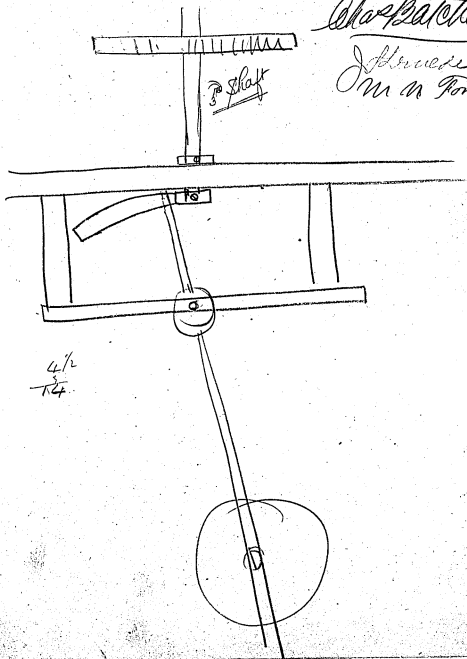
66

Speaking Micrograph

Apr 10th 1948

A Edison
Chaspatcher

Illustrated
in m Force



67

Phonograph

April 10-78

J. A. S.

Chas. Patchen

J. H. H. H.

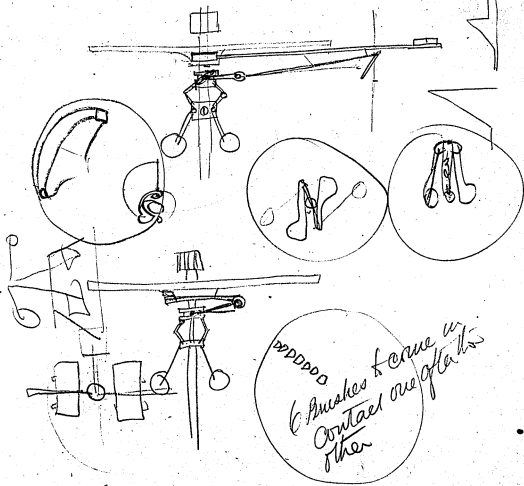
W. C. C. C.

M. N. Force



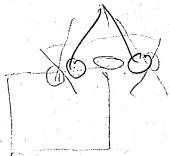
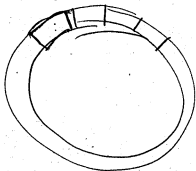
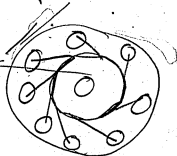
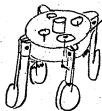
Phonograph Regulator April 10th 1888

Chas. S. Selden
Inventor
of the
Gramophone



Speaking Phonograph
Regulator - April 10 '88

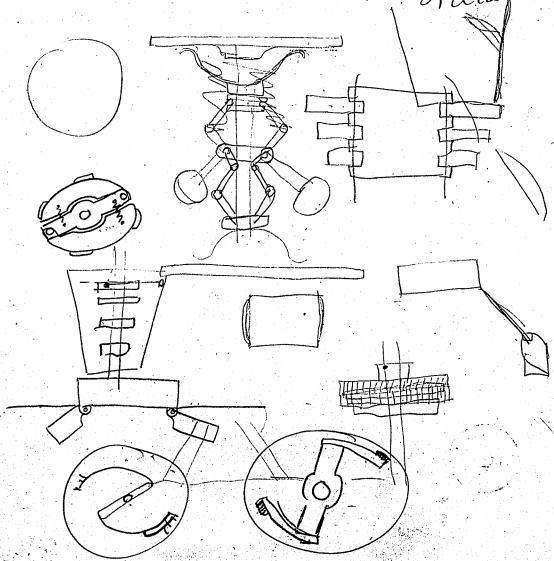
Stinson
Character of Tone
Medium



Speaking Phonograph
Regulator

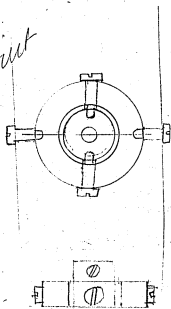
Apr 10 1878

Chas. F. Smith
New York
New York
T. Aldrim



Phonograph

Revolving joint



April 10 1878

7 a 9 h

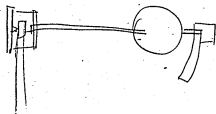
J. H. Keck

W. E. Cannon

M. M. Force

Chas. Bartlett

17
72



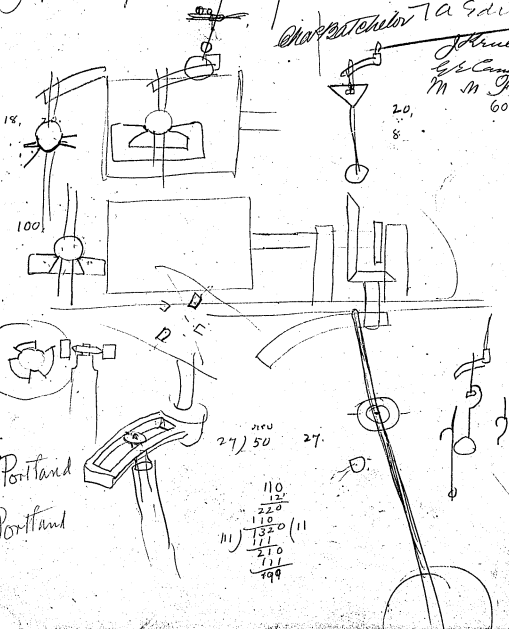
72

Photograph

April 10 1896

~~Character~~ T A S d m

Johnson
Es Caman
M M Force
60.



Portland
Portland

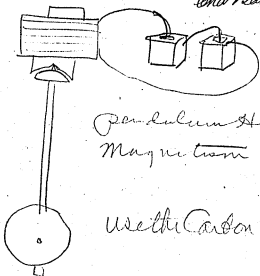
27) 50 27.

110	
12	
220	
110	
111	(11
111	
111	
199	

Photograph

April 10 1878

~~Chas. Westcott~~ SA Edison
J. H. Brown
J. B. Lawrence
M. M. Force



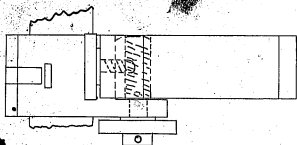
Pendulum hung by
Magnets

with Carbon disk

9.

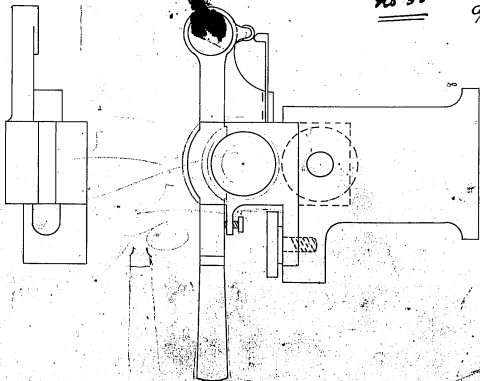
37.000 000
25
185 000 000

THE LADY, INC.
T. A. EDISON,
MENLO PARK, N. J.
U. S. A.



No 35

*Tracing of Adjustable
Release on Cylinder Shows -
Apr 11th 1898
Char Batchelor*



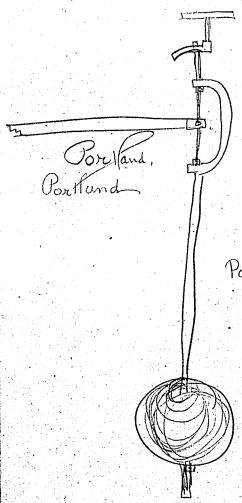
75

Photograph

April 12 1876
7 A Edm

Oliver Batchelor

J. H. Russell
J. S. Cannon
M. S. Force



Portland,
Portland

Portland
Portland

Portland

*
Portland, Portland

Portland

Photograph

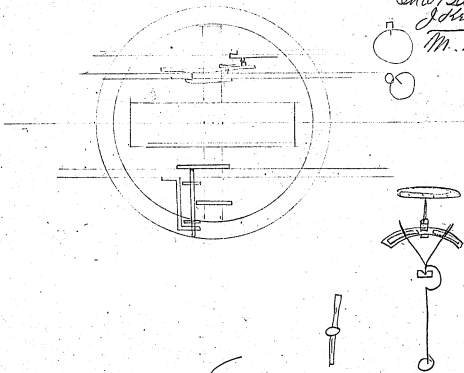
April 12 1878

795

Charleston

Johanna

M. M. Force

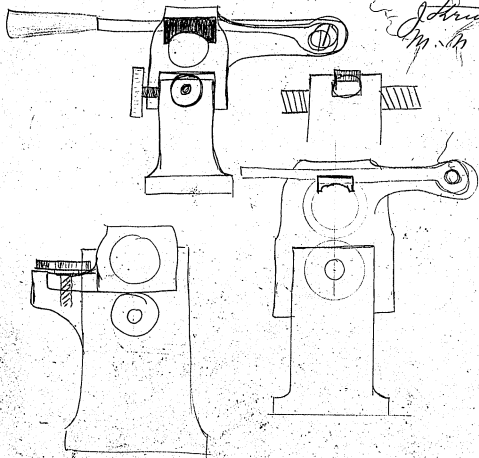


77

Speaking Phonograph

April 12 1878

W. A. Edison
of Latham
New York
to
John P. S. Taylor
John
M. M. Force

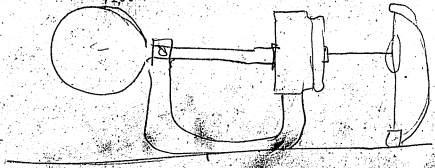


new 10 11

20.72
21.34.10
01.11
20.31
09.31

20.91

13.00
22.00
2.50
3.00
3.00
42.50

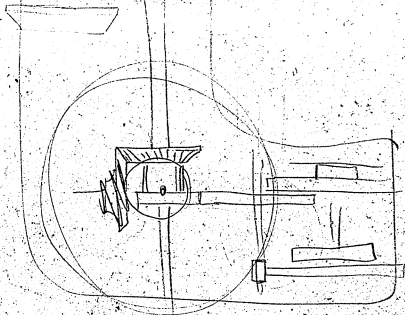


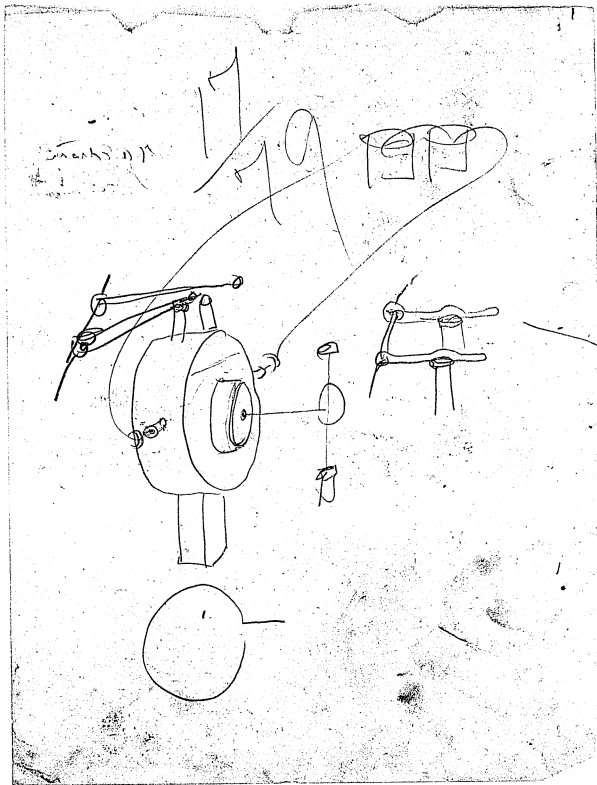
Spooling Cylinder Monograph
Revolution of large cylinder 80 per min. at 1300 inch
Travel across in minutes one: Apr 11 - 1878

Stems give 2 $\frac{1}{2}$ turns to minute at Adams
Small chain wheel 18 $\frac{1}{2}$ to the turn ^{Johnnie}
Height drops in one minute (once over cylinder) ^{Wm. M. Force}
24 inches.

Table would have to be 2 ft 6 in high

George Johnson





79

Phonograph

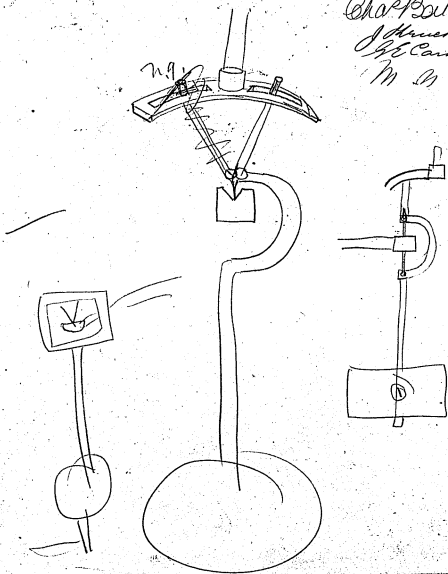
April 12 1878

Wm. S. Edison

Charles Batchelor

John C. Carr

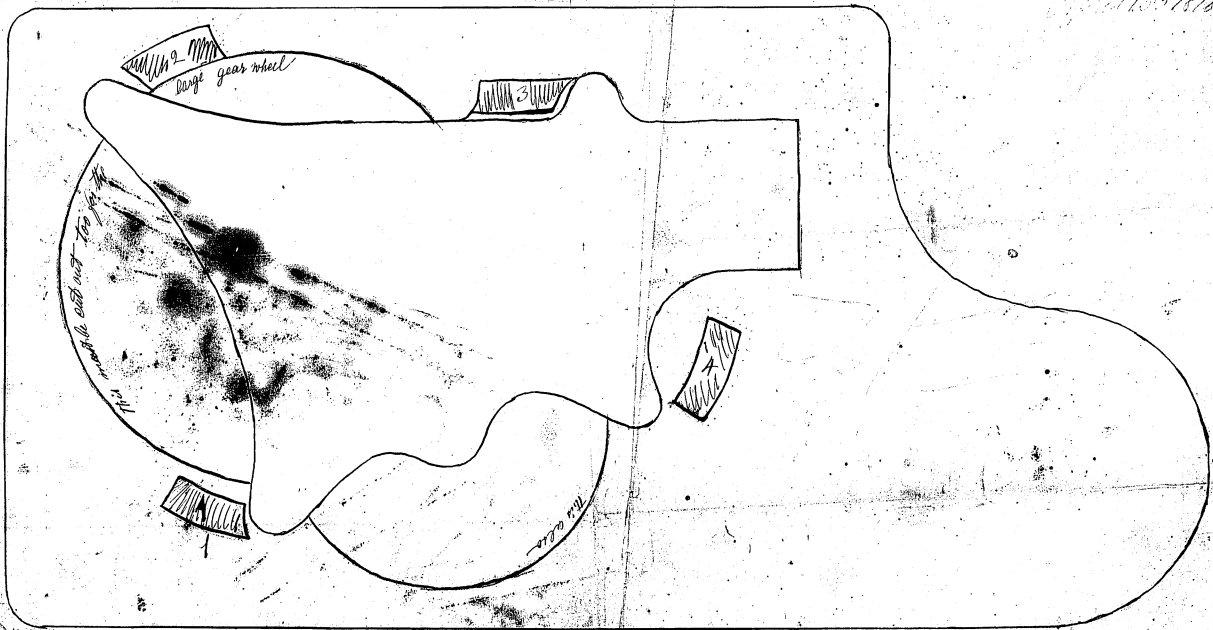
M. M. Force



Tracing of Lead Plate Photograph

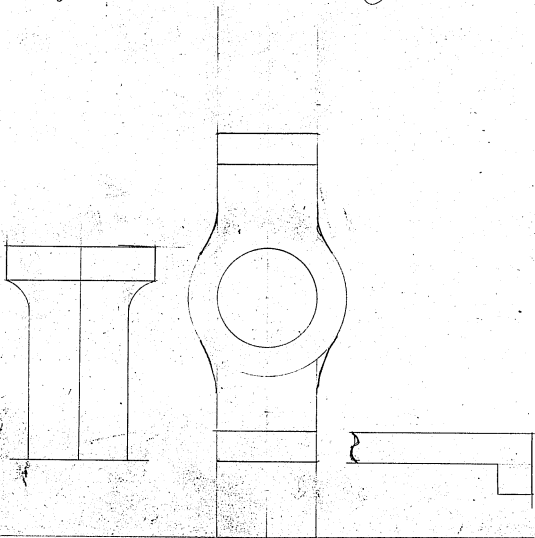
April 10th 1878
John H. Rose

April 10th 1878



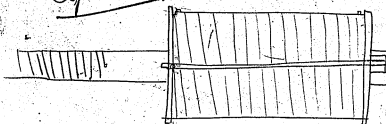
81

Photogram April 13th 1888
Pendulum bracket J. K. M. S.



Spec'ing Phonograph
Apr 26th 1875

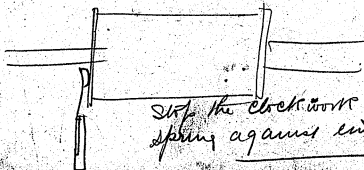
Chas. S. Smith
Johnston
M. S. Force
H. A. Edison



groove must have certain position relation to thread
Pin for registering must be certain distance apart and certain
distance from groove

Inside measurement of flange must be accurately measured between

In order to cut groove in right place drill small hole
in cylinder by jig and set tool for thread by it, and
also cut through it for slot, this hole when drilled
at right distance (determined by jig) from flange will
determine a point where the thread must pass through
put down below surface for about $\frac{1}{1000}$ in order to start
tool or thread.



Stop the clock work by
spring against end of cylinder

April 31 1874

Duplicating Machine of the - Patent of

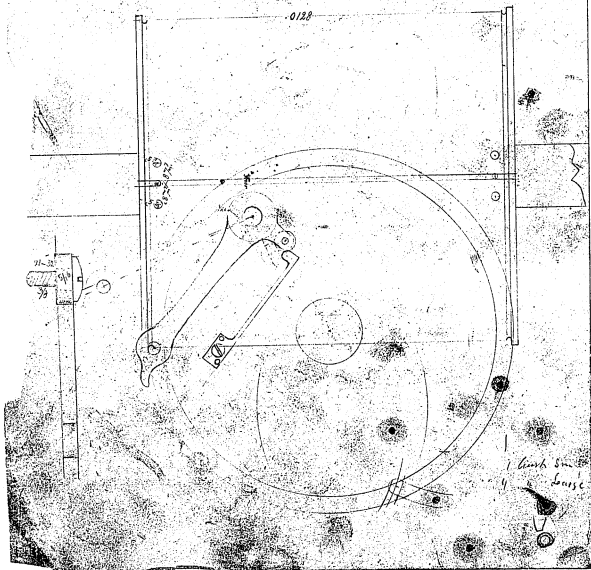
Charles Ketcher
Inventor
M. M. Force
N. A. Edison



After many experiments we have concluded that
full the method used, that the following are
the best: A plate showing of the sheet has
grooves placed in it corresponding to the thread
on the cylinder or plate, on this plate is laid
a sheet properly inked, the raised dots, downward
in the grooves - a frame fits of the like the
printer use for locking up Galleys. Some

Sketching Chronograph May 1st 1857

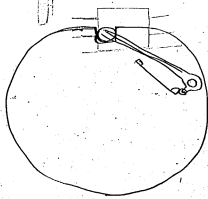
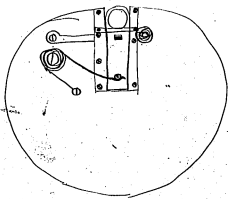
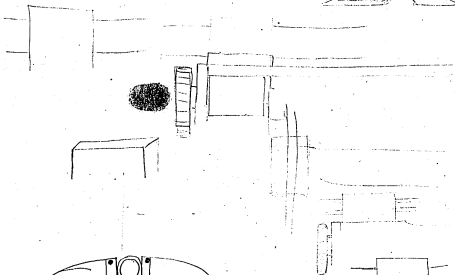
W. H. Force
Chart & Calculator
W. H. Force



Speaking Phonograph

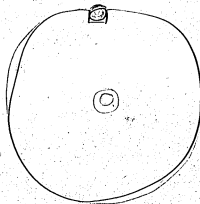
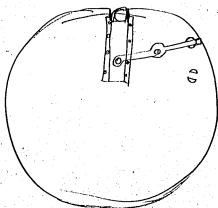
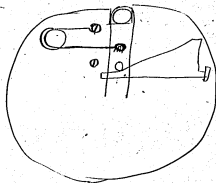
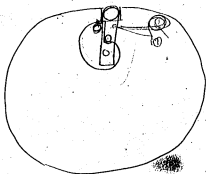
May 20th 1888
T. A. Gray
Chas. Hatcher

W. H. H. H.
In an Force



Speaking Phonograph

May 3rd 1878
Jardun
Chassat
In in Force

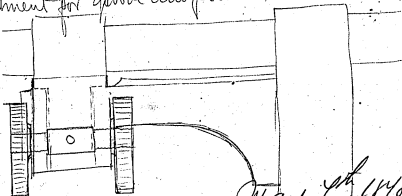


Speaker of Phonograph

May 4th 1898

Charles A. Bletcher
7th Edition
Johns Hopkins
In. in. Ford

adjustment for groove and point -



Note

May 4th 1898
In Phonograph when you speak the low tones
like vowel sounds go deeper in ^{the} groove than
and consequently are deeper in proportion to their
length, & the spring may not go to the bottom of
these as readily as shallower so if you had
a cast or electrotype of wrong side did work
with strong spring the tones that were deepest
would make most noise: But still the
vowel sounds are now the strongest vibrations
and we get the strongest sound from them
& are trying to weaken them or reinforce the
weaker ones.

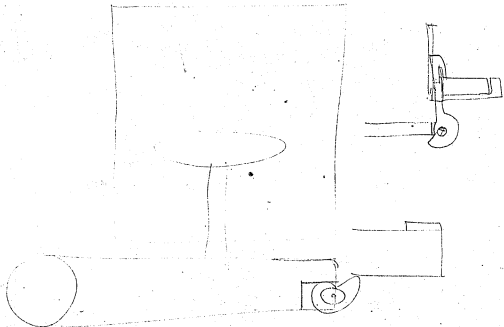
C. Bletcher

Speaking Monograph

May 4th. 1898

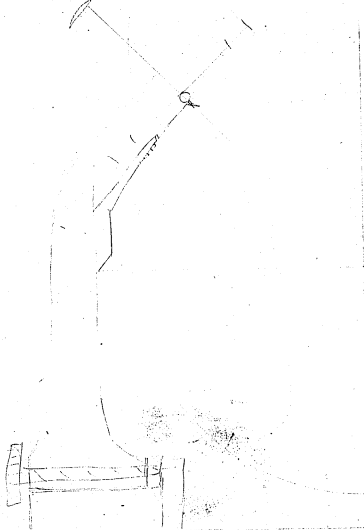
Y A Edison
Chas. Batchelor

in n Force



Speaking Phonograph
May 5th 1878

Wm
Chittick
M M Ford
TAC

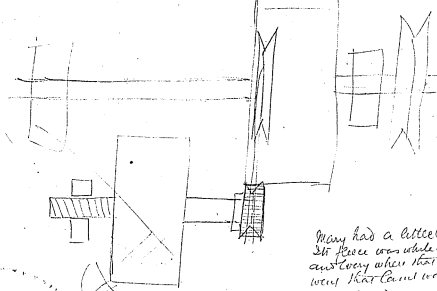
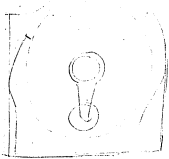


Working to the

May 9, 1878

Edison

To Edison
Johnston
William
M. N. Force



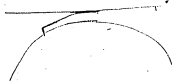
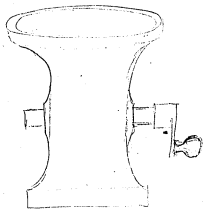
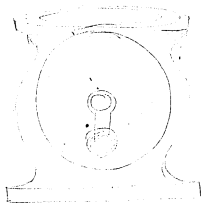
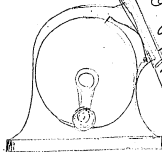
Many had a little lamb
The force was white as snow
and every where that many
went that lamb was
sure to go

Working type

May 9th 1898

Charvat chitin

J. A. Edison
J. H. Pomeroy
W. H. Force



Speaking toys

May 9 1878

12 feet at least of indiarubber

cylinder $2\frac{3}{4}$ - 17 turns

Chapman

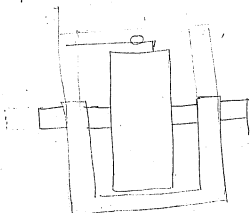
of a Edison

Johnston

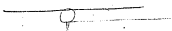
W. C. Conner

M. M. Parke

11/13/78



WV

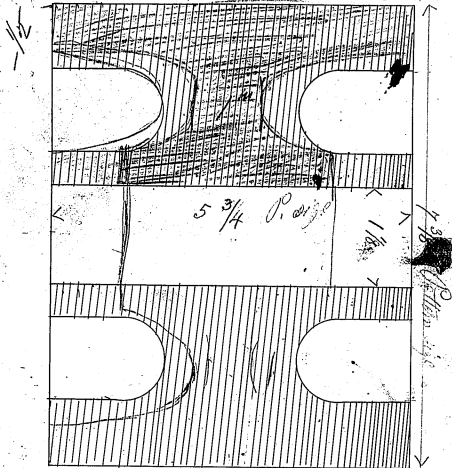


Spring Monograph

May, 1906

Pattern for cylinder (Ham machine)

Observed in the
J. Mack
in an Edison
Edison

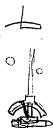
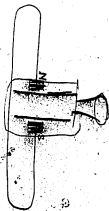
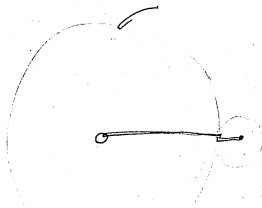


Phonograph

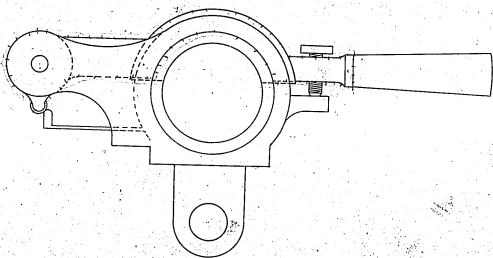
May 10 1878

7 a 22

Charles Batchelor Johnnie
William
M. H. Force



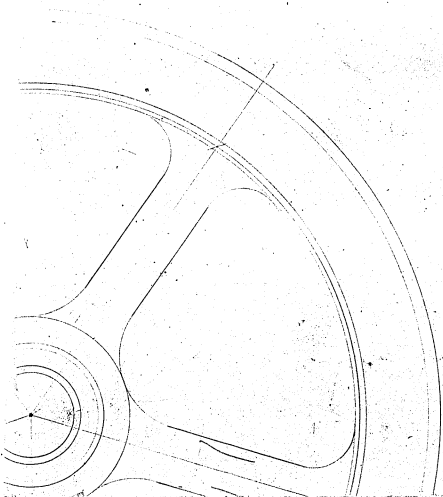
May 14th 1888 J. H. H. H.



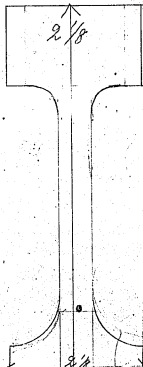
run to 19 1/2 lb
run to 14 1/2

Photograph May 14th 1878

J. H. Mason




1/2" dia. 10 ft.
to
1/2" dia. 10 ft.



May 15th 1898.

J. H. Thompson
Am. & Force
Chaffinch
Brooklyn, N.Y.
T. Edison

Alterations on Bergman's

- I. Make boring bar with 2 cutters to bore out bearings on their place.
- II. Bore bearings out to $1\frac{1}{2}$ " diam.
- III. Make bushings of best cast steel, harden glass hard, lap out inside & ground outside to enter in holes tight.
- IV. Turn shaft a short distance true to place steady rest, turn cylinder off, cut new threads  with stone, take burrs which arise in cutting them off with emery wheel.
- V. Turn shaft off to fit bushings tight.
- VI. Put machine together & lap with coarse washing shaft lengthways until it revolves free enough.
- VII. Set arm & levers to work right & put dampening screw in with piece of cotton
- VIII. Put in new point & round off point cleanly & slowly.
- IX. Make pins for adjusting.

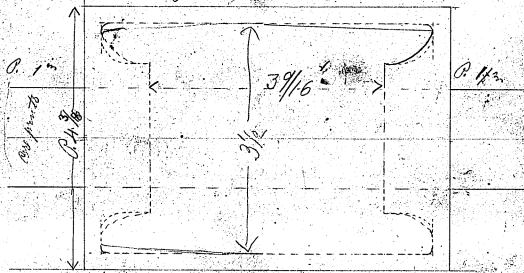
Spreading Panagraph May 16th 1888

Johnnie
O. W. Pattee
13 1/2
in force

3/4 1/2 1/2 1/2 1/2 1/2
3/4 1/2 1/2 1/2 1/2 1/2
3/4 1/2 1/2 1/2 1/2 1/2

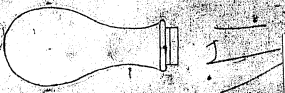
finished Sp. Diagram 4/16
T. Edison

Pattern size 5 3/4



May 16th 1888 J. H. H. H.

102



101

Message

Fr. New York. to J. A. Edison -
Would like to see you will you be in
the city today and where or shall I run out
~~the~~ sig. John Tom

another From Boston

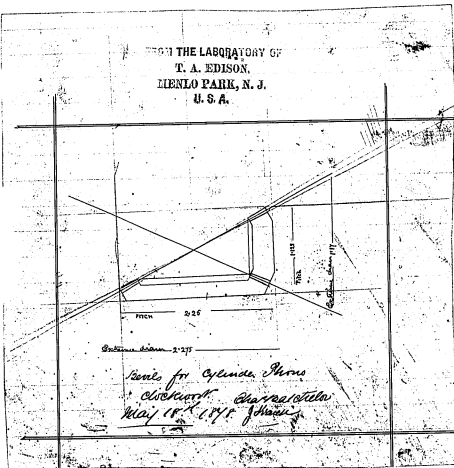
17
/ 102

102

101



FROM THE LABORATORY OF
T. A. EDISON.
MENLO PARK, N. J.
U. S. A.

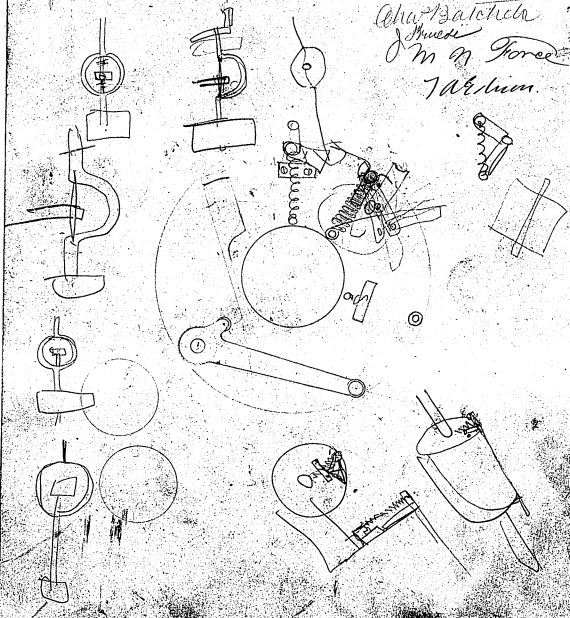


*Scale for Cylinder Iron
clockwork Charles F. Johnson
May 18th 1878*

Speaking Penograph

May 20 1878

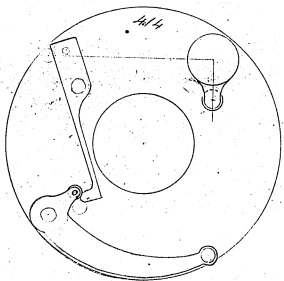
Chas. Batchelder
Inventor
New York



Speaking Phonograph

May 25th 1878

Chas. Batchelder
J. House
M. in Force
N. Edmuns

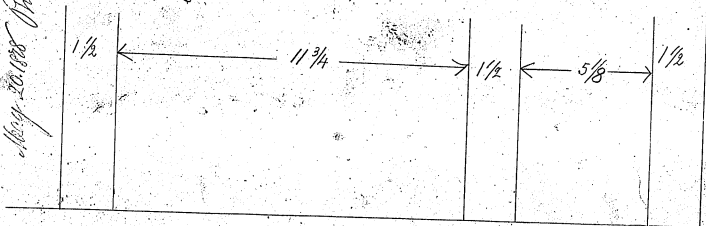


106

May 20, 1888 Photograph

Tarapur
District
Tal. Karmala
M. N. K. R. S.
Chakrapalator

Distance of bearings



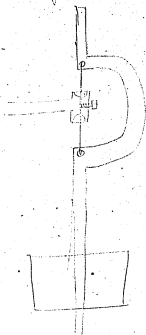
Speaking phonograph

May 21

Chas. B. Balaban

Baldwin
Kruschi

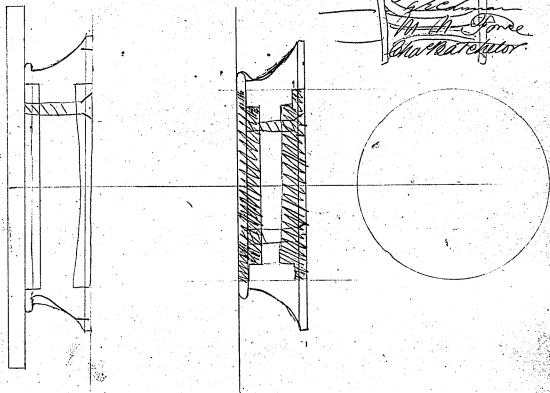
W. B. Jones



Speaking Phonograph

May 24th 1878

Edison
Lithrup
Schenck
M. H. Stone
The Inventor.

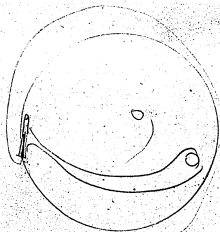
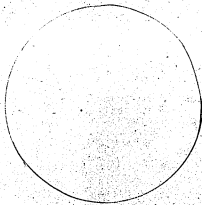
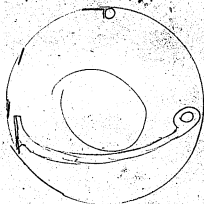
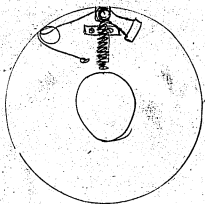


Speaking Photographs

May 28th 1948

Tarling
Da Batchelor

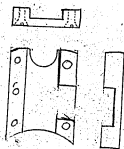
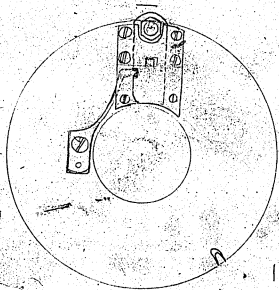
Johnson
Mrs. M. Jones



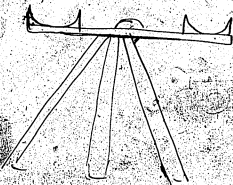
110

Photograph May 30th 1898

J. J. J. J.
Chapman
Mr. W. J. J.
J. J. J.



111



112

Speaking Phonograph

May 31 1898

Chas. D. Baskin

To Edison

J. J. Morse



used for holding glass point. ~~glued~~
screw at top and lightened with ~~glue~~
screw M. J. Morse

Shaft $\frac{1}{16}$ long -

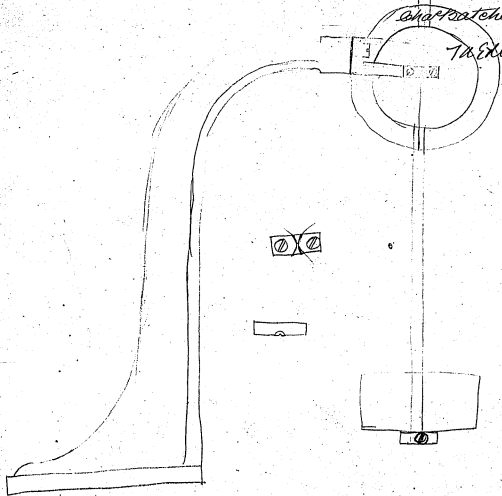
levu 1" long from centre to centre
point less than $\frac{1}{32}$ long -

113

Phonograph June 30 1878

J. M. Hull
In the Force

Chapman
The Edison



Photograph June 30 1858

Shaded
in in force

sketches X 1

Medium

Speaking Monographs

June 9th 1878
C. W. Beecher

R. A. Edison
J. H. Kinsley
J. B. Cameron
M. W. Ford



Cylinder lens on shaft and other screws to adjust
or to raise so that it can be adjusted without
any adjusting nuts.

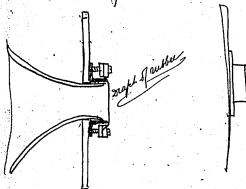
Speaking Monograph

June 11th 1878

Chas Batchelor

Mouthpiece for Phon-

J. Kruesi
in force
TAE

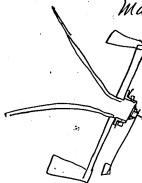


118

Laboratory of
Prof. Thomas A. Edison
Menlo Park, N.J.

June 17th 1878
J. Kruesi

Make diaphragm and mouthpiece
for Phonograph like
this



117

Speaking Monograph

June 14th 1898

Experiments to get the hissing consonants reproduced better
Massachusetts
Martin W. Fox
J. H. Russell
Salomon

1. Mouthpiece Rh and huss used at first no good

2. Made mouthpiece like this better husses but not good



3. put watch spring crossways in No 1 mouthpiece
⊖ watch spring ~~not~~ no better than No 2

4. put in 5 springs like this: no better



5. Made mouthpiece with larger hole and steep incline
no better 'hisses' than No 2



turn over 2 pages

6 Speaking Phonograph

June 14 1898

~~to give~~
Charvat et al
Martin M Jones


- 6 Look Mouthpiece No 5 and ^{perforated} pasted card on bottom and talked to it ^{got it good} but too low.
- 7 Perforated card put on in No 6, ^{perforated} with pin a number of times (about 25 holes) and talked through it, I gave the 'ishes' very plainly, and I got excellent talking without any dampening of the diaphragm
- 8 Made double diaphragm of ~~two~~ type plate but see nothing in it ^{diaphragms to apart.}
- 9 Perforated a number of small holes in the one nearest the mouth but it gave no better talking and nothing like experiment No 7

OLL

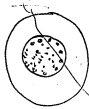
10 Phonograph Speaking

June 24th 1907
Sage
Murch





Chas. Patchala
Martin H. Jones

- 10 Fastened a number of wires on bottom of mouthpiece so:-  but no better result

- 11 Put solid piece of rubber on bottom of mouthpiece with number of perforated holes in so:-



This does not work as well as the cardboard in 907 perhaps it was because the cardboard had the burrs sticking up towards the mouth

12. Put on bottom of mouthpiece discs with slot in so   and finally filed the 3 slots to an bevel edge so   and turned it round and both sides to mouth no better

Speaking Monograph

June 14 1948

H. A. Edison

Chas. B. Bickel

13.

Madison, Pa.

13

Try a number of mica discs ^{1/16} inch
apart with hole in middle ^{1/16} inch. Force

Result

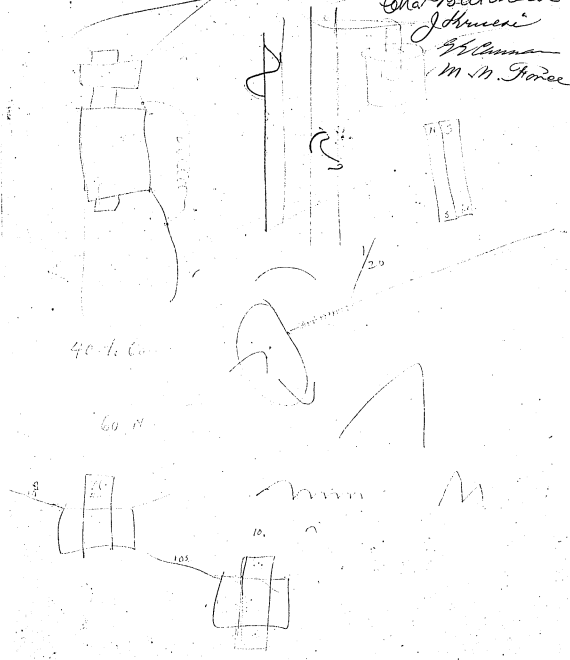
1.4. Try dampening the diaphragm when
point is rigid on diaphragm

Result

Speaking Monograph

June 15 1948

15a Edison
Chaparral
Johnson
Williams
M. M. Force



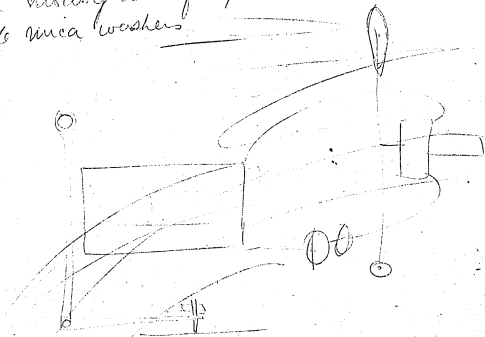
Speaking Phonograph

June 18th 1878

Tadison

Chas. S. Catlett

- Make point on diaphragm ^{of brass} ~~of iron~~ Force
Make mouthpiece on large diaphragm ^{of brass} ~~of iron~~
Make mouthpiece for Phon. an in it make
6 zinc washers

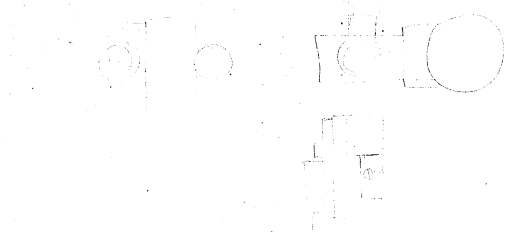


Working drawing

June 22nd 1945

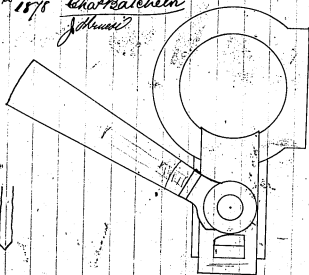
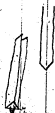
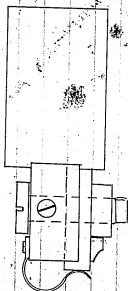
Chlorobutadiene

J. H. Kueri
J. M. M. Force
FAE



New 'throw-out' device for
Edison's hand Monograph

June 23rd 1878 Chattanooga
Tennessee



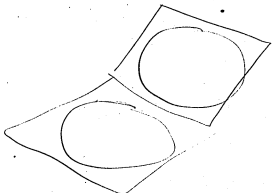
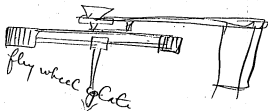
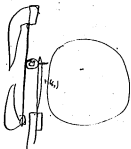
126

Photo

June 23 1876

TAE

Chas. B. Bateketo / J. H. H. H. H.
40 / M. H. H. H.



raised run on plate
or cone goes into groove
on plate & this
tightens the coil

Shooting Photograph June 26th 1878

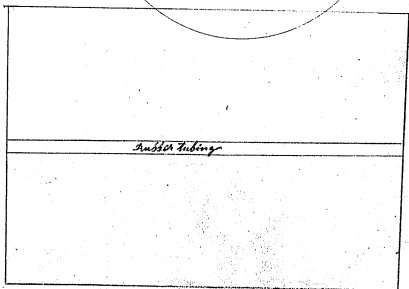
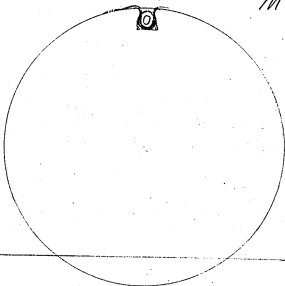
G. H. Johnson

J. L. Johnson

J. L. Johnson

Charlatheer

M. M. Ford



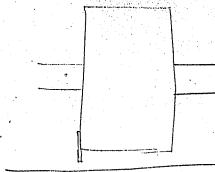
Monograph by
Children's alphabet cipher

July 16th 1898

A	H	O	V	2	9
B	I	P	W	3	10
C	J	Q	X	4	11
D	K	R	Y	5	12
E	L	S	Z	6	.
F	M	T	2	7	
G	N	U	1	8	

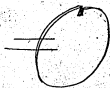
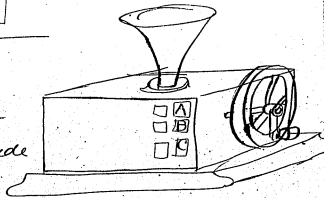
W. B. Balch
Martin Ford
J. Kinross
A. Alderson

Make 40 lines on drum
and 40 letters & figures
as cylinder revolves
it pushes down one slide
& close another by a pin
on the periphery.



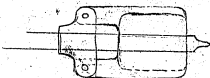
M I E A
N J F B
O K G C
P L H D

The slides must be made
to drop itself and cam
on shall hold it up
the time to drop it & then takes another



Thu Aug 27th 1878
Johns

Chas Batchelor
M: H Force
W Eding



131

T. A. EDISON.

Menlo Park, N. J.,

Aug 1st 1878

10

John Muse.

Fit up one of the clock-
work phonographs with worm regu-
lata and registering apparatus
~~and try to register.~~ For registering
put 2 pins on one side of groove.

Chas Batchelor.

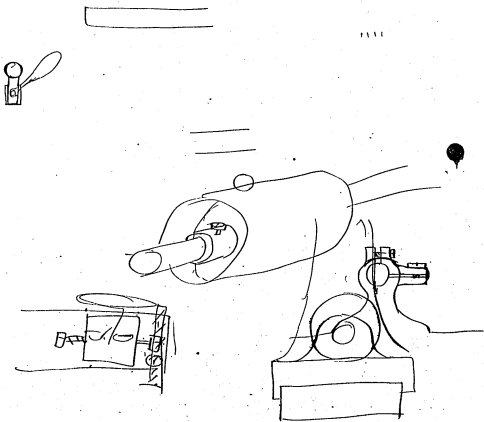
Done August 5th 1878
after that a spare driven by main shaft was made
and dried the

130

Alteration on Phonograph Aug. 1888

J. Husick

Chas. Batchelor
M. or F. or
T. A. Edison



Speaking Phonograph. Aug 13th 1878

H. A. Edison

I find that the hissing consonants are by no means perfect on the phonograph, that they are ~~worse~~ when ~~not~~ ~~damp~~ improved when a piece of matel is put in the rubber, this we all well know, but it led me to enquire why it was so and I find that the putting in of a matel only stiffens and makes more acid the spring & diaphragm,

that in our ordinary dampened diaph. when the hissing consonants are given the diaph works between the dampener and the spring rubber, and the point lies dormant against the tin foil. The remedy I propose is to make point solid on diaph and dampen both sides thus: - so that the slightest hiss will come on the tin foil

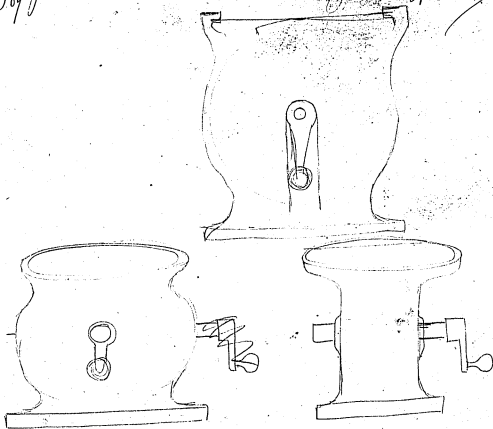


Chas. Batchelder

J. H. M. Force

Toy photomicrograph

Aug 15 1895
Chas. Patchin
M M Force
W. H. Adams



134

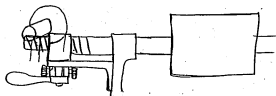
Speaking Phonograph

Aug 5th 1878

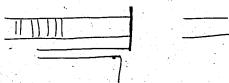
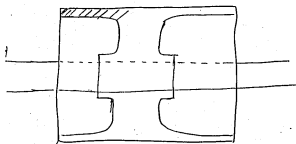
W. S. Ketchum

Johns
My N. Force

Alterations on Exhibition machine T. A. Edison



Decided :- that it is
better to put the nut
in from underneath because
it helps to hold up the shaft
and probably makes it
run easier



135

Speaking Micrograph

Aug ~~1841~~ 1841
Aug 1841

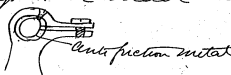
New Plan for electrating principle

To be altered from Pol to Model. *Chas. B. Bateley*

- 1 Make Cylinder diam & long ^{of 2 1/2 inches} *M. H. Forel*
- 2 lengthen arm and make side side adjustment on the arm



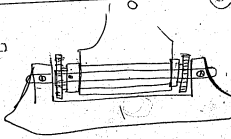
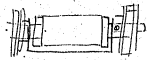
- 3 Make box bearings for Metaltine bushes and bearings to be made 2.



4. Make the brass nut on end of bracket, which must be made proportionate for the brass at end. with lever

- 5 Make straight Spring on top of bracket to put in the brass on screw

33
23 1/2
33
27
889

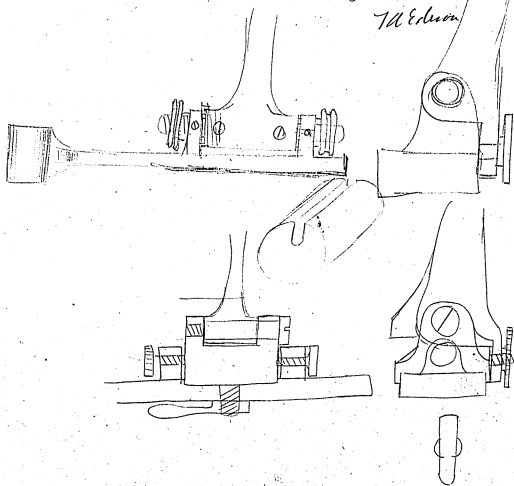


Speaking Phonograph

Aug 18th 1878

Chattanooga

J. K. Hume
Am in Tenn
7th Edition



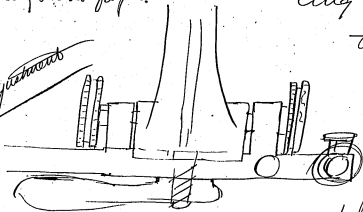
137

Speaking Phonograph.

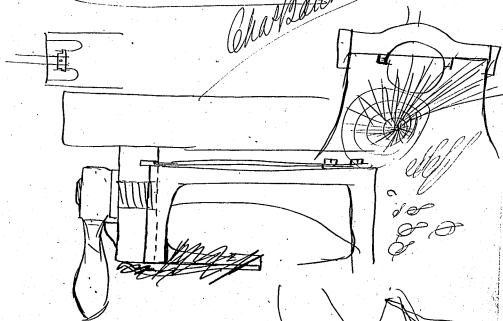
Aug 19th 1878

Johnson
in St. Louis
Jackson

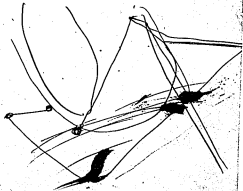
Side adjustment



Charlaton



Edgimund

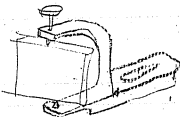
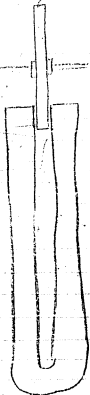


Speaking Phonograph magnetic regulator
Aug 25th 1888
Johnson



Charles Johnson
M N Force
T Alden

3/16. or 1/4

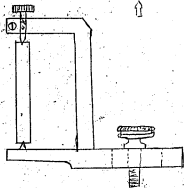


139

Aug 26th 1888

Johnson

M N Force
T Alden

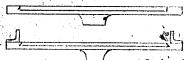


140

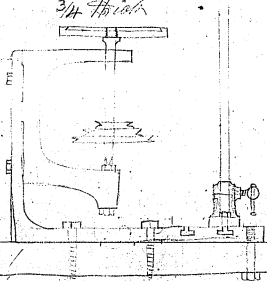
Specification for grinding *Open* *1888*

Aug. 28th 1888

J. H. Brown
M. M. Jones
W. H. P. H. H. H.
W. A. Edwards



8 in. Dia.
3/4" Thick

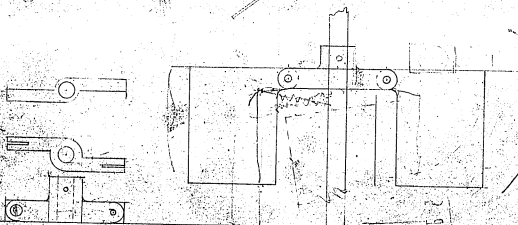
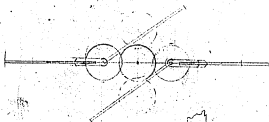
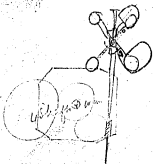


Rotating Machine Regulator
Sprocket, Photograph

Aug 29th 1891

G. A. Edison
Chas. Batchelor

J. H. Mueser
M. S. Jones

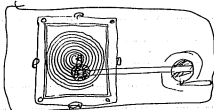


T. A. EDISON.

Menlo Park, N. J.

187

Phone
Aug 31 1878
T. A. Edison
John Kreusi
Notary Public
in and for Force



Meadow Meadow

Menlo Menlo

5000. Menlo Park. Menlo.

Menlo Park Menlo Menlo

15. *mk.* 15. 15.
 10. *4500* 45. 30
 4500

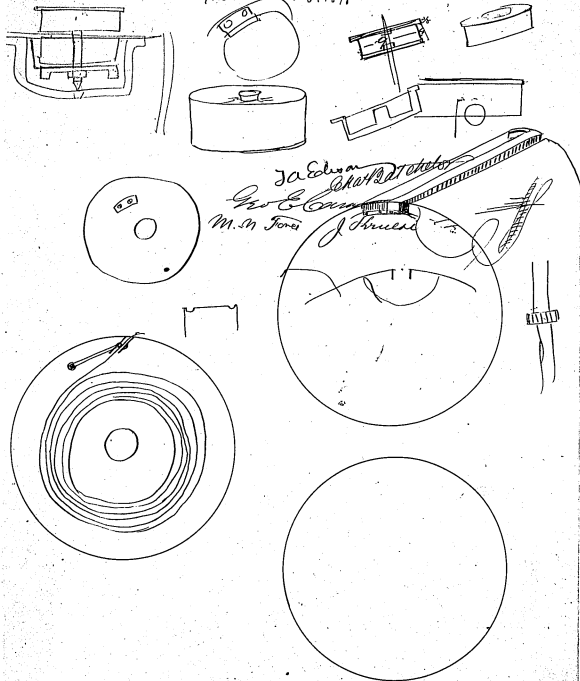
150
31
4500

45

Personally appeared before me this day of 1878, the said Thos. A. Edison, Chas. Batchelor, John Kreusi, and Martin Force, and acknowledged the above to be their signature

Notary Public.

Photograph Coes S. 1875



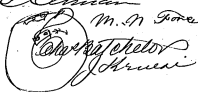
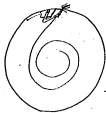
144

Orthonychia Cor 5, 1878

70 Edwin

W. C. Brown

M. N. Ford

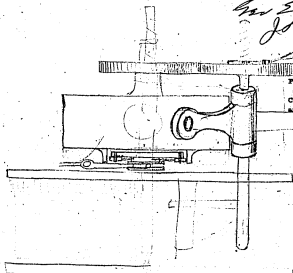


Phonograph

Oct 6th 1878

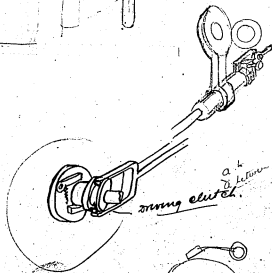
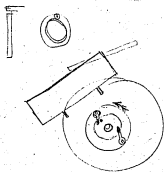
J Alden
Chas Batchelor
M. M. Ford

Geo E. Corman
Johnnie



Personally appeared before me this day of
1878, the said Thos. A. Edison,
Chas. Batchelor, John Kreusi, and Martin Ford,
and acknowledged the above to be their signature

Notary Public.



a 4
Edison
swing clutch.

Photographs

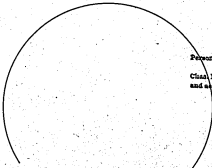
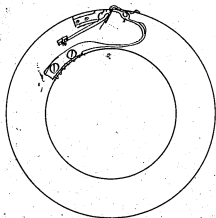
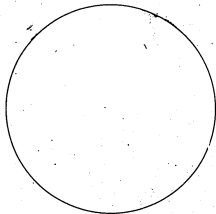
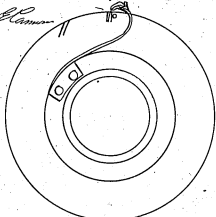
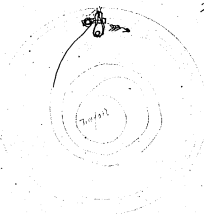
Series for putting on Pinfall from Hole

Oct 4th 1948

Clara Batscheler

John Krusk
M. M. Forde
J. W. C.

W. L. Cannon



$$C = \frac{E}{R} = \frac{E}{C} = \frac{E}{R}$$

$$R = \frac{E}{C} = \frac{E}{R}$$

$$E = C \times R$$

Personally appeared before me this _____ day
 19 _____ the said Clara A. Batscheler
 Clara Batscheler, John Krusk, and Martin Forde
 and acknowledged the above to be their signature

Notary Public

Oct 7 1878
JAE

Geo E Coman Johnnesi

Photograph
 Cylinder stationary fast on shaft
 Cylinder with 3 threads on one end
 Arm for mouthpiece on sleeve with rack to engage
 in the cylinder thread
 Arm with upright to stop against
 Friction device for holding up the sleeve when turning out
 - Fly wheel on bottom of second shaft
 - Cylinder 9" diam
 - Design in three clockwise coverings to prevent change
 mouthpiece
 - Make arm that carries all mouth piece, stop pin,
 and rack pivoting from one common center

T. A. EDISON.

74 Edison

Thompson

Menlo Park, N. J.

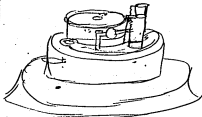
Oct 7 1878

Charvatich

Thompson
Geo. E. Coman
Johnnesi

Personally appeared before me this day of
 1878 the said Thos. A. Edison,
 Chas. Hatcher, John Swann, and Martin Force,
 and acknowledged the above to be their signatures

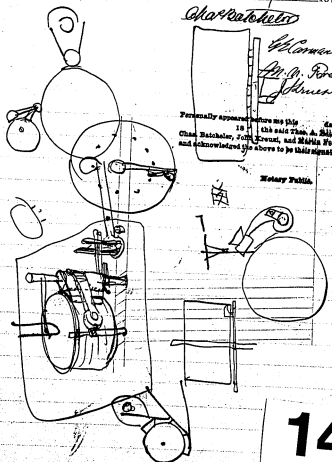
Notary Public



Personally appeared before me this day of
 1878 the said Thos. A. Edison,
 Chas. Hatcher, John Swann, and Martin Force,
 and acknowledged the above to be their signatures

Notary Public

149



148

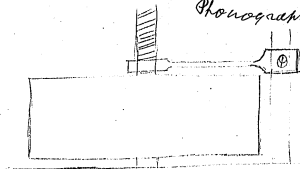
Photograph Cert. 1878

Screw + cylinder in sleeve

Johnesi
Chas. Hatcher
M. M. Force

TAE

G. E. Carman



Personally appeared before me this _____ day of
18 _____, the said Thos. A. Edison,
Chas. Hatcher, John Krouse, and Martin Force,
and acknowledged the above to be their signature

Notary Public.

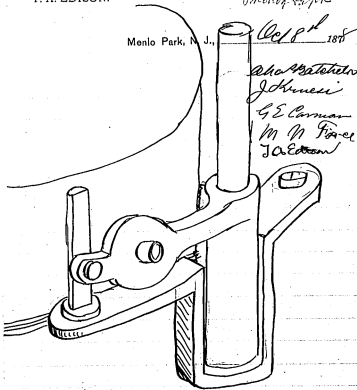
T. A. EDISON.

Menlo Park, N. J.,

Photograph

Cert. 1878

Chas. Hatcher
Johnesi
G. E. Carman
M. M. Force
T. A. Edison



Personally appeared before me this _____ day of
18 _____, the said Thos. A. Edison,
Chas. Hatcher, John Krouse, and Martin Force,
and acknowledged the above to be their signature

Notary Public.

152

151

466'06
666

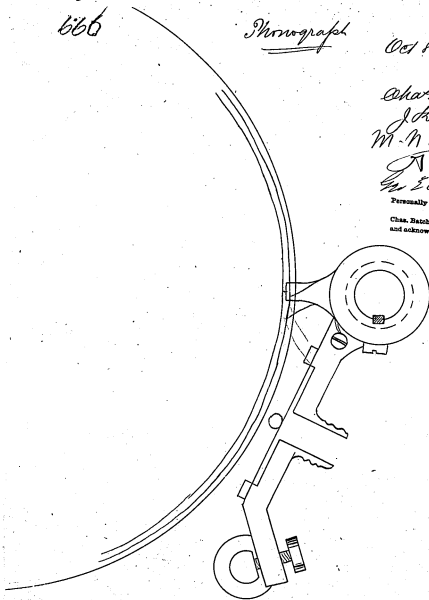
Photograph

Oct 8th 1898

Char. Hatcheter
J. Kinnear
M. N. Fera
A. E.
W. E. Laman

Personally appeared before me this _____ day of _____ 1898 the said Thos. A. Edison, Chas. Hatcheter, John Kinnear, and Martin Fera, and acknowledged the above to be their signature

Notary Public.



Phonograph.

Oct 8 1898

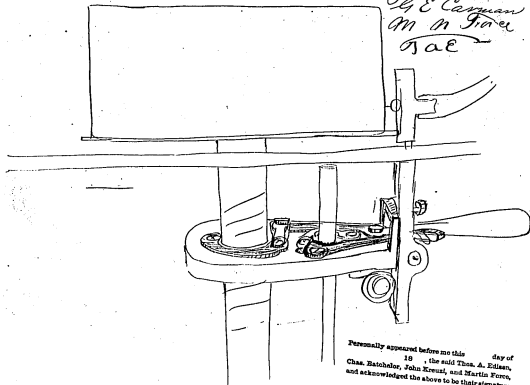
Chas. H. Hatcher

J. H. H. H.

J. E. Casman

M. H. Force

Notary



Personally appeared before me this day of
1898 the said Thos. A. Edgars,
Chas. Hatcher, John H. H., and Martin Force,
and acknowledged the above to be their signature

Notary Public.

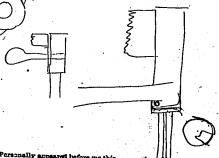
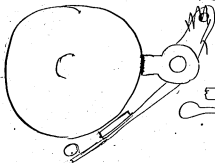
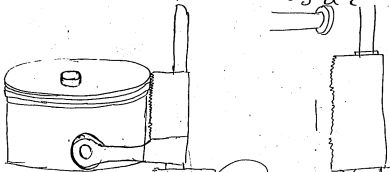
Monograph.



*Get a ink
character*



*W. L. Cannon
J. Russell
M. N. Fowle
J. A. E.*



Personally appeared before me this 10 day of June, 1910, the said Thos. A. Hillam, Chas. Batcher, John Kewest, and Marin Fowle, and acknowledged the above to be their signature

Notary Public.

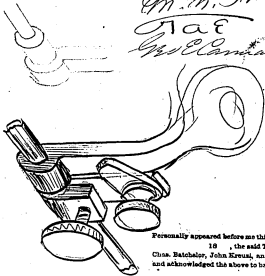
Monograph

Oct 8 1878

Cha. Ketcher

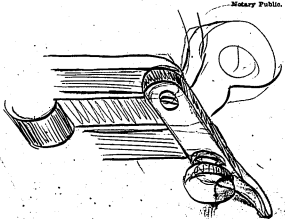
Johnesi
M. M. Force

Geo
McClendon



Personally appeared before me this day of
18 , the said Thos. A. Edson,
Chas. Ketcher, John Kroul, and Martin Force,
and acknowledged the above to be their signatures

Notary Public.

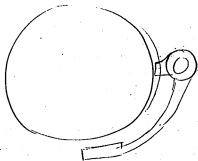
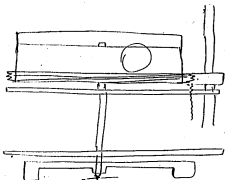


Monograph

Oct 8 1878

Charles H. Hatch
J. H. H. H.
M. M. Ford

J. A. E.
Geo. E. H. H.



Personally appeared before me this _____ day of _____
18 _____, the said Thom. A. Milton,
Chas. Hatchler, John Kressel, and Martin P. H. H.,
and acknowledged the above to be their signatures

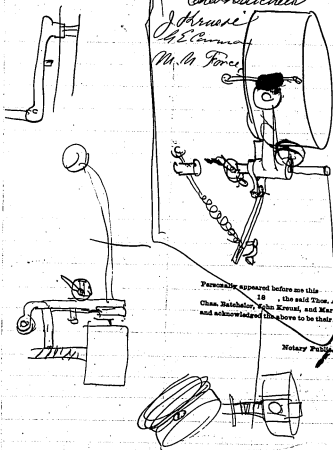
Notary Public

T. A. EDISON.

Menlo Park, N. J., Oct 5 1878

7th Paragraph

*Char. Batchelor
J. Krusi
J. E. Cannon
M. M. Force*



Personally appeared before me this _____ day
18 _____ the said T. A. Edison,
Chas. Batchelor, John Krusi, and Martin F. Fox
and acknowledged the above to be their signature

Notary Public

159

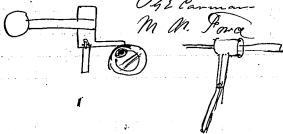
T. A. EDISON.

Menlo Park, N. J., Oct 5 1878

Paragraph 7th

Char. Batchelor

*J. Krusi
J. E. Cannon
M. M. Force*



Personally appeared before me this _____ day
18 _____ the said T. A. Edison,
Chas. Batchelor, John Krusi, and Martin F. Fox
and acknowledged the above to be their signature

Notary Public

160

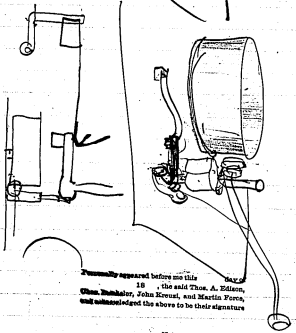
T. A. EDISON.

Phonograph
Chas. B. Bank, Inc.

Cect of 1878

20.

45	45
50	40
13	0
17	0
1	0
5	0
11	0
1	0
5	0
11	0



I personally appeared before me this
 18th day of June, 1878, the said Thos. A. Edison,
 Chas. B. Bank, John Kruss, and Martin Pore,
 and acknowledged the above to be their signature

Notary Public.

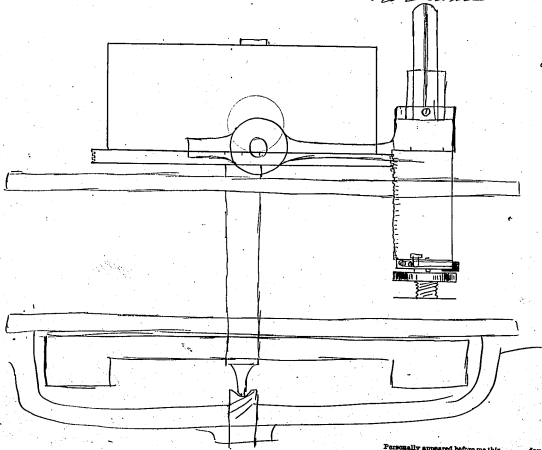
Photograph

Oct 8 1948 J. Kruse

Chas. Katchela
M. N. Fove

R. W. E.

W. S. Cannon



Personally appeared before me this day of
18, the said Thos. A. Eileen,
Chas. Katchela, John Kruse, and Martin Fove,
and acknowledged the above to be their signature

Notary Public.

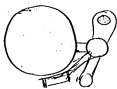
162

Photograph

Oct 8 1946
Charles Schelos

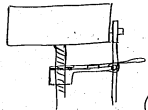
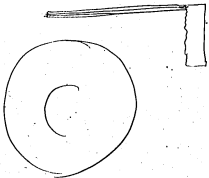
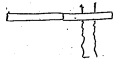
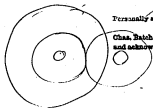
Schelus
M. M. Force
J. A. [unclear]

Geo. E. Cannon



Personally appeared before me this 10th day of October, 1946, the said Charles Schelos, John Brown, and Martin Force, and acknowledged the above to be their signature

Notary Public.



Photograph

Oct 8 1848

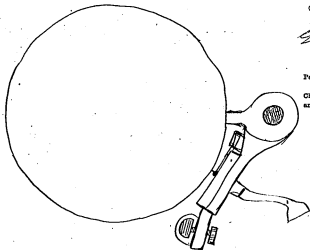
Charlottesville

Johnes

M. M. Force

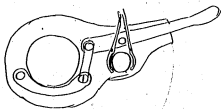
TUE

Wm E. Cannon

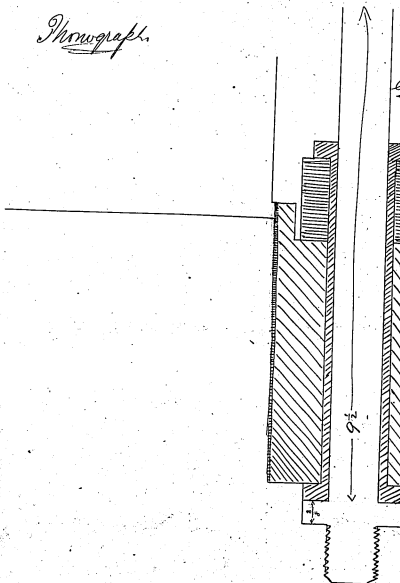


Personally appeared before me this day of
18 , the said Thom. A. Edison,
Chas. Batchelor, John Kreuz, and Martin Force,
and acknowledged the above to be their signature

Notary Public.



Photograph



Oct 8 1874

Charlottesville

J. H. Jones

M. M. Jones

T. C. C.

R. E. C. C.

Personally appeared before me this _____ day
18 _____, the said Thos. A. E. Jones,
Chas. B. Ketchum, John Krenel, and Martin F. Jones,
and acknowledged the above to be their signatures

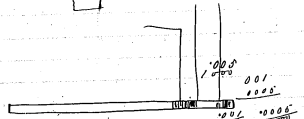
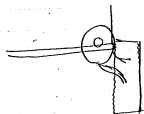
Notary Public

T. A. EDISON.

Menlo Park, N. J., Oct 8 1878

Photograph

*Chas. Batchelor
John Kruesi
M. Force
Edison*



Personally appeared before me on this 8th day
of October, 1878, the said Thos. A. Edison,
Chas. Batchelor, John Kruesi, and Martin Force
and acknowledged the above to be their signatures.

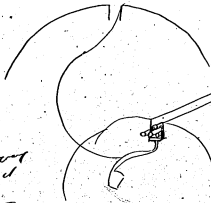
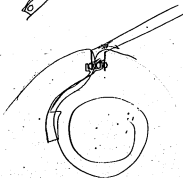
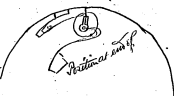
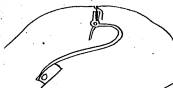
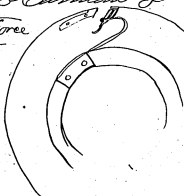
Notary Public.

Photograph

Nov 9. 1979

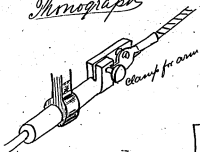
Ja Emar Akaratchet
G. L. Cannon Idhuwe

M. M. Force



3 rods
gal drawn one way first
put thru the opposite way
as always in place of
setback tin rods.

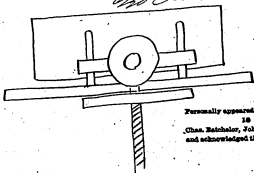
Stenograph



Dec 8 1878

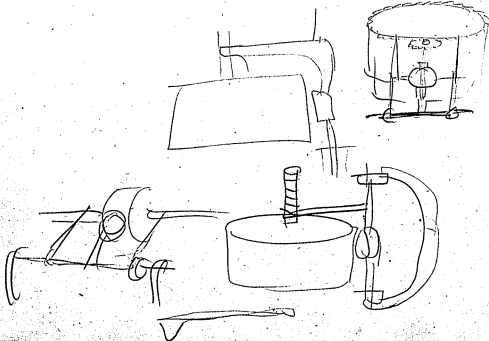
*Chas. B. Ketcher
of
M. M. Force*

*T. A. E.
W. E. Claman*



Personally appeared before me this day of
18 the said Thos. A. Edgell,
Chas. B. Ketcher, John Kewell, and Martin Force,
and acknowledged the above to be their signature

Notary Public.



168

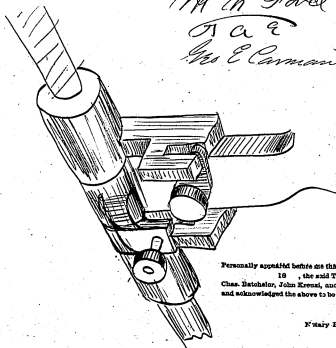
Photograph.

Oct 8th 1848

Charles C. Catlett

J. H. Hunt
W. M. Fox

T. A. &
G. E. Carman

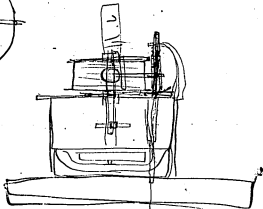
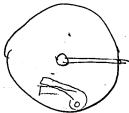
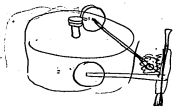
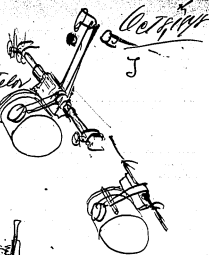


Personally appeared before me this day of
18 , the said Thos. A. Edison,
Chas. Datchler, John Kruent, and Martin Fox,
and acknowledged the above to be their signature

Wm. J. F. Public

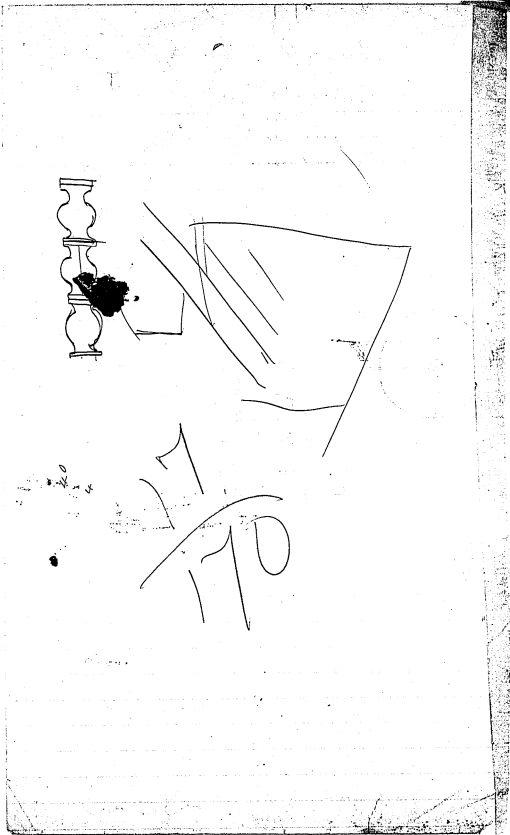
Photograph

Chara Satchel
Mr. J. J. Jones
J. Krucci
Waldron



Photograph of this device
was taken by Mr. J. J. Jones, Mr. Krucci,
and Mr. Waldron, and the photograph
is to be their signature

Henry P. Hill



170

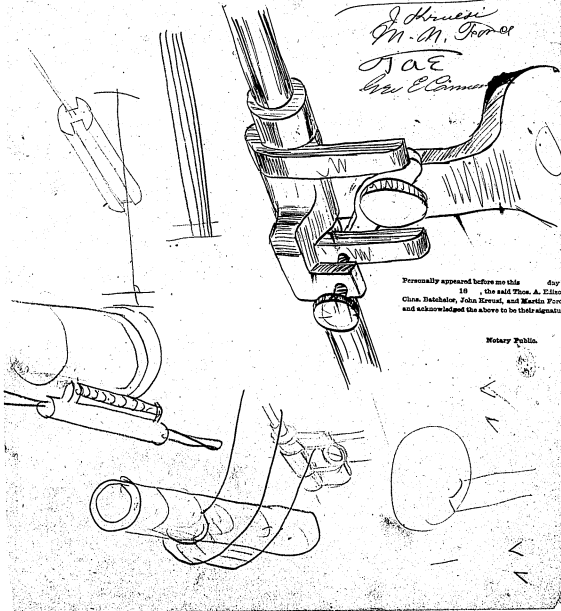
Minograph

Oct 8th 1948

Wharfedale

J. H. H. H.
M. H. H. H.

TAE
W. E. H. H.



Personally appeared before me this day
19 , the said Thos. A. H. H.
Chas. H. H. H., John H. H. H., and Martin H. H.
and acknowledged the above to be their signatures

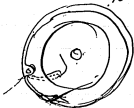
Notary Public.

T. A. EDISON.

Menlo Park, N. J., Oct 7 1878

Monograph

*Chas. Batchelor
John Kewal
M. M. Force
for T. A. Edison*



Personally appeared before me this _____ day of _____ 18____, the said Thos. A. Edison, Chas. Batchelor, John Kewal, and Martin Force, and acknowledged the above to be their signature

Notary Public.

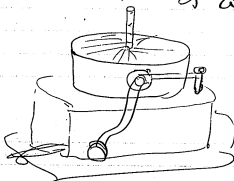
172

T. A. EDISON.

Menlo Park, N. J., Oct 9 1878

Monograph

*Chas. Batchelor
John Kewal
M. M. Force
for T. A. Edison*



Personally appeared before me this _____ day of _____ 18____, the said Thos. A. Edison, Chas. Batchelor, John Kewal, and Martin Force, and acknowledged the above to be their signature

Notary Public.

173

Photograph

Oct 8th 1876

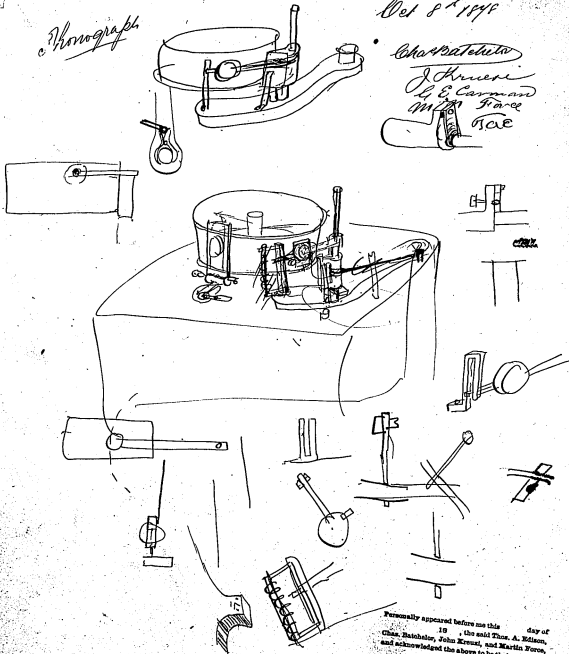
Chas. B. Hatch

J. H. Kruess

L. E. Carman

M. J. Force

3ae



Personally appeared before me this day of
1876 the said Thos. A. Edison,
Chas. B. Hatch, John Kruess, and Martin Force,
and acknowledged the above to be their signature

Notary Public.

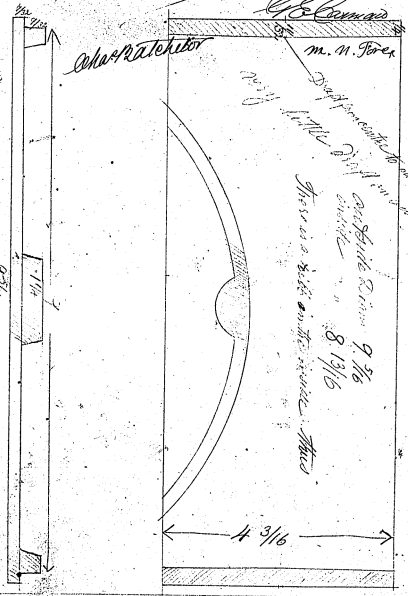
Violating Biograph. Oct 7th 1898

Patterns 7 A Edm

J. K. ...
G. C. ...

aka Ratchebor

m. n. Forex



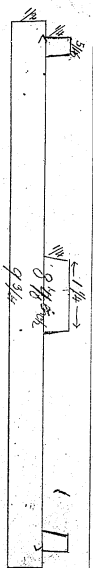
Drift pointed to machine
very little dirt in
outside rim $9 \frac{5}{16}$
inside " $8 \frac{13}{16}$
There is a hole on the inside. Thus

1/16
1/16

Distating Phonograph Celloph. 9th 15' 8

drawn made us

J. Krucic



Phonograph

Oct. 11th 1878

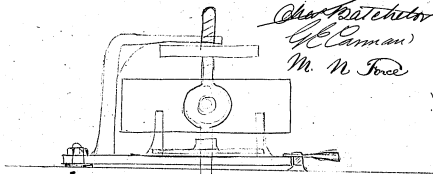
J. H. Mason

J. A. Edison

Chas. F. Satchler

(H. C. Cannon)

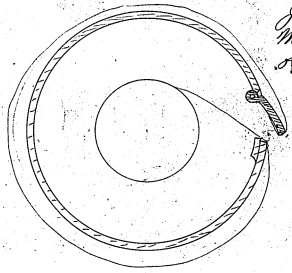
M. N. Ford



128

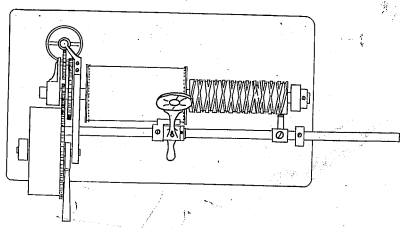
Phonograph.

Oct 14th 1878.
Charles Victor
Johnson
Mr. N. Force
New Albany



179
M. H. Ford
McGraw

Made by John P. H. ...



179

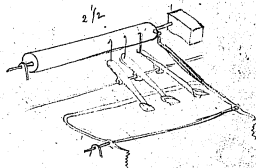
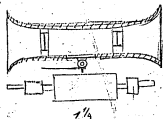
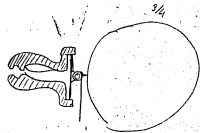
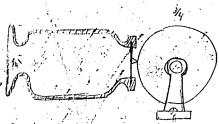
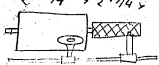
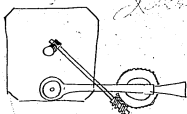
Phon

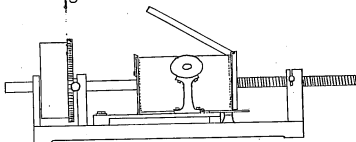
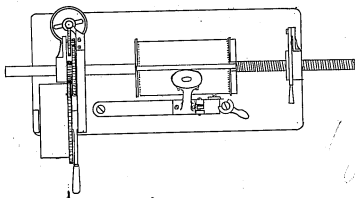
Nov 30 1878

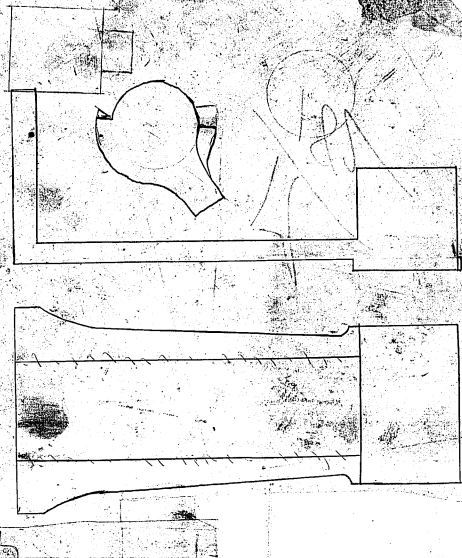
These make small model

Made by J. P. Ott.

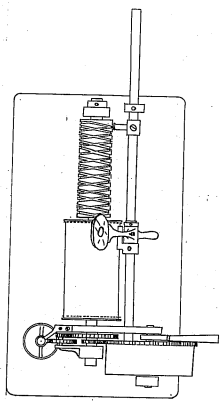
Dimensions $\frac{1}{4}$ & $\frac{1}{4}$



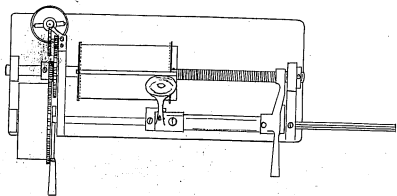




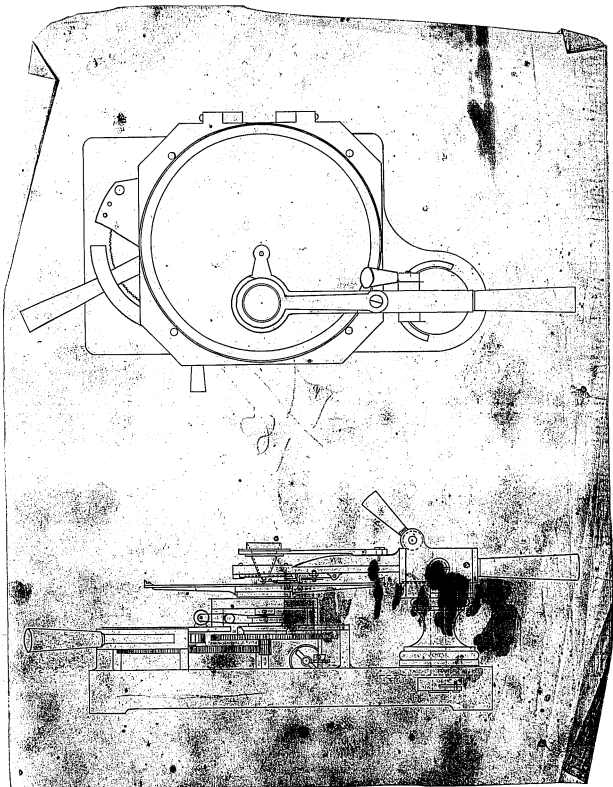
182



183

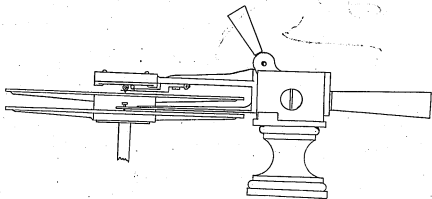
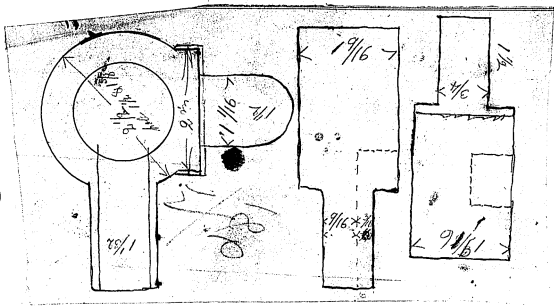


184



185

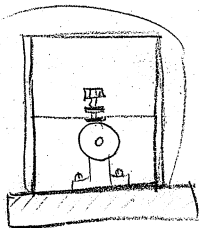
186



187

Notebook, Volume 18

This volume covers the period June-December 1878, with one additional entry for November, 1876 and a few for 1879. The notes and drawings are by Edison, Charles Batchelor, Charles P. Edison, and John Kruesi, and they relate entirely to the telephone. Many were witnessed by members of the laboratory staff and notarized by Stockton L. Griffin. The volume consists of 123 numbered, unbound leaves.

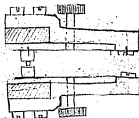


(Handwritten notes)
 70 Edison
 Chas. H. ...
 M. H. ...
 Johnson

3 5
 12
 12 2 0 2 9
 3 2 0 7
 1 0 0
 || || ||

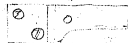
New Receiver for Telegraph
July 8th 1878

Johnnesi
T. A. Edison
Chas. Patchelor
Martin Force
W. Carman



Presently deposited before me this
10th day of July 1878
Chas. Patchelor, Johnnesi, T. A. Edison,
and acknowledged the above to be their joint work.

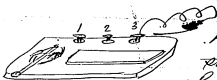
Notary Public.



T. A. EDISON

Menlo Park, N. J. July 4 1878

Mr. Russi



Make an instrument to show the magnetograph principle with key at left hand and the two bridgeposts behind key. To the right of key put a piece of brass about $1\frac{1}{4}$ inch wide and 4 or 5 inch long; with flexible cord attached to post 3 & has a platinum faced strip on other end.

Chas. Patchelor
Finished J. H. Russi

1. Armature must be as long with diameter of the spiral.

Copied on page 95 Vol 4
Earle's Recollections Vol 5, 1871
W. Carman

3

4

T. A. EDISON.

Menlo Park, N. J.

July 24 1878

4
John Keesi
Make new magnets
for Partrick and Center telephons.
4 rings for each. put in Carbon
& adjust for talking.
Chas. Katchela

Three compound magnets of J. Hobsons
extra best steel 2 of $\frac{3}{4}$ by $\frac{1}{2}$ steel 11/16
by side & 1 of $\frac{1}{2}$ " □ steel all of 3 three
pieces.

2.1 made single of J. Hobsons choice 1 1/2 x 1/2
For all of them are iron plates made to
be magnet on back of bracket instead of
bottom, for 1/4 are ^{new} plates made to cover
transmitter on from outside without taking the base
machine apart. Finished August 8th
1878

John Keesi

5

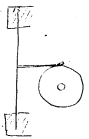
Review Receiver

Meats Pack Dept

Chas J Edison
76 Edison
Chas Batchelor

Approved
Motion Picture
E. B. Barnard

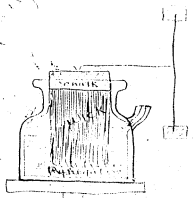
Patented April 10, 1906
Edison Electric Light Co.
New York, N. Y.



finely powdered chalk
" " " mixed with Keroline
" " " Lamp Black
" " " Black lead

July 1st 1906
Chalk and Pyrogallic
Keroline
Lamp Black
Black lead

Chalk and Pyrogallic
Keroline
Lamp Black
Black lead
No. 1
No. 2
No. 3
No. 4
No. 5
No. 6
No. 7
No. 8
No. 9
No. 10
No. 11
No. 12
No. 13
No. 14
No. 15
No. 16
No. 17
No. 18
No. 19
No. 20



Looked on Aug 27, 1906
E. B. Barnard
Oct 4, 1906

Sept 17th 78

Cincinnati, Ohio

- (Ammonia Chloride)
- + 1/4 ounce white Ammonia
- + Dilute Zinc
- + Disulphide (alaba)
- + Castor Oil
- + Dilute Soda
- + Mineral Water
- + Dilute Chlorine
- + Dilute Strontia
- + Iodine
- + Oil Nigella
- + No. 1 Syrup
- + Chlor
- o Dilute of Lime

Chas. J. Fisher
 J. A. Dixon
 J. H. H. H. H.
 J. Martin Force
 J. E. Carran

Formally approved in Form No. 10
 Chas. Fisher, John Dixon, J. H. H. H. H.
 and acknowledged the above to be the substance

Henry D. B.

Refused on page 76, Vol 4, Exp. Reason
 Let 8. 1979 J. E. Carran

9

Electrolytic Refining of Metals

Aluminum

Sept. 11/1911
(1911) (1911)

The Edison
Thruout
Museum
G. L. (Edison)

- Cobaltic Manganese Chloride Salts
- Cobaltic Manganese
- Cobaltic Potash
- Potash Soda Inside of Soda
- Nickel Sulfate
- Nickel Chloride
- Nickel Sulfate - Silver H.
- x Nickel Sulfate
- Cobaltic Manganese
- Cobalt
- Nickel Manganese
- Potash Calcium Nitrate
- x Potash - Copper
- Potash Soda - Soda
- Potash Soda
- x Nickel
- x Nickel Ammonia
- Nickel Soda - Soda
- + Tartaric Acid
- + Potash Carbon
- + Turpentine
- + Hydrochloric Acid
- Nickel
- Hydrochloric Acid - Soda

I formally approved before me, this 13th day of September, 1911, the above and acknowledge its accuracy and authenticity.

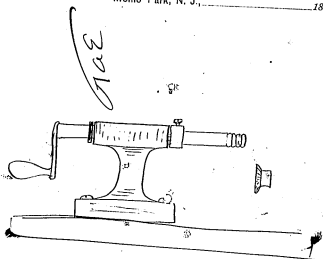
Henry D. ...

Looked over pages 80, 81 & 82
Researches Oct 5, 1898
Edison

T. A. EDISON.

24

Menlo Park, N. J., _____ 187



Speaking Telephone
 Charles Johnson
 Edward M. H. Force

Sept. 19th 1875

Chas. Edison
 New Canaan
 Stockton, Calif.

Order on page 19, Vol. 4
 E. H. Rowman Oct 9, 1875
 B. H. Rowman

9

6
Chas. P. Edison

Edison

Telephone Recorder

Sept. 22nd 1878

- Chloride Calcium N.Y. went well
Carbonate Potash " " "
Chalk saturated with a solution of Caustic Soda
pyro-glycerine and acetate mercury - Good
Chalk and Caustic Soda - Good at first but dries
Salt Petre and Acetate Mercury. irregular. keeps
dry.
Chalk saturated with Solution of Caustic Soda
pyro-glycerine and acetate mercury. Good after
standing - very good and come even, and good
after turning off.
Caustic Soda - good - N.Y.
Sulphate Soda and Salt petre - very low

Chas. P. Edison
John W. ...
Admission ...

Copied on page 78. Vol. 1. Exp. Records
Pers. 12/78 *Edison*

Possibly corrected to be made
10
Chas. P. Edison, Patent
and acknowledged the above.

Henry Folger

7
Telephone Receiver
Sept 23rd 1878

Walden
Chas. P. Edison
W. Edison

Cork saturated with Ammonia n.g.
Cork saturated with Caustic Soda, Glycerine,
Acetate mercury Pyrogallie acid n.g.

Telephone Receiver
Chas P Edison

Sept 24th 1878

Chlorate Potash - wont fuse -
Ferrous Potassium n.g. wont fuse
Sulphate Magnesia n.g. "
Ferrocyan Potash - n.g. "

Photochemical
J. J. Thomson
Harden
Physically opaque
Chem. Microlog. and
and other subjects

Sulphate Soda
Chlorid & Zinc
Sulphate Baryta powdered and mixed with a
solution of Acetate Mercury, pyro, glycerine
and Caustic Soda. works very good but is
rather to opt -

copy in box of Vol 4 Exp. Microsc. J. J. Thomson

119

Speaking Telephone Receiver

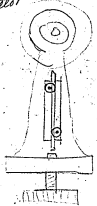
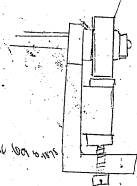
Oct 2nd 1878

TAE

for using up time

John F. Adams
Minton Ford
G. B. Adams

Edison



T. A. EDISON.

Menlo Park, N. J.

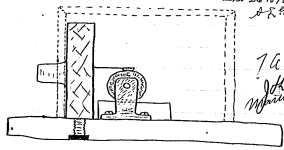
copied on page 55 of 100 to 1000

Sept 26th 1878

Speaking Telephone Receiver

TAE

John F. Adams
Minton Ford
G. B. Adams
Sept 26 1878
J. F. Adams



T. A. Edison
John F. Adams
Minton Ford

Personally examined before me this 10th day of the month of October 1878, the said John F. Adams, John Minton Ford, and G. B. Adams, and acknowledged the above to be their signatures.

History File
Copied on page 99 of 100 to 1000
Oct 18 1878

13

12

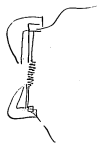
14
T. A. EDISON.

Telephone
Menlo Park, N. J.

187

Oct 2 1878

T. Edison
Johnesi
M. Force
G. E. Corning
Chas. B. Ketcher



air draft coils
plating rather the
resistance,

Received of the
10
10
10

Entry book

looked on p 85, 92 &
Exp. November 20, 78, 1878
G. Corning

14

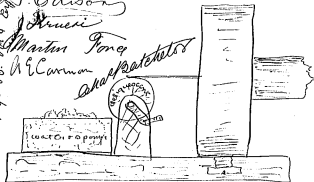
14

14
Creating Telephone Apparatus

Oct 30 1878

T. A. Edison
Ames
Martin Force
G. Corning

looked for page 82, 114 & Exp. November 20, 78



The above enclosed increase to present
exaggeration

delinquent

Personally examined the
10
Chas. B. Ketcher, John
and acknowledged the above

Entry book

187
Menlo Park, N. J.

T. A. EDISON

15

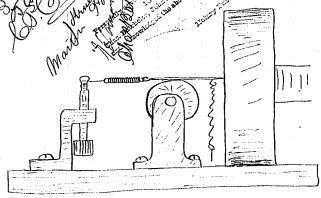
*Open J. G. and
Reamers
Oct 27 1878
Edison*

*March 1879
Edison*

*Edison's
Electric
Lighting
System
No. 10
Edison's
Electric
Lighting
System
No. 10*

T. A. EDISON

Menlo Park, N. J. 187



Boog Group

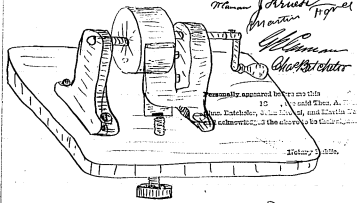
*Reduced on page 82 Vol 4 Esch
Reamers Oct 8. 1878*

16



*Attachment for turning discs
Oct 27 1878*

*Edison on page 88. Vol 4. E. R. - E. P. Edison
Oct 2. 1878*



*Edison
Edison
Edison*

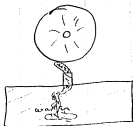
History of Edison

Oct 27 1878

Menlo Park, N. J. 187

T. A. EDISON

17



Speaking Telephone Receiver
 Oct 4, 1876

A. EDISON.

Menlo Park, N. J.

187

Wm. H. Preece
 J. H. Russell
 J. M. Brainerd
 W. C. Brainerd

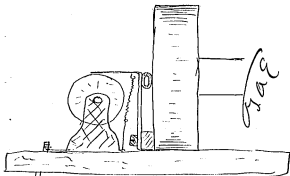
Personally approved by the following:
 19
 Chas. Matthews, John Brainerd, and others, and acknowledged the above to be the

Secretary of the

Entered on page 8700 v
 Exp. Researcher Oct 8, 1898
 W. C. Brainerd

19

10



Speaking Telephone Receiver

Wm. H. Preece Oct 3rd 1876

Copy of page 8100 v
 Exp. Researcher 1897 1898
 W. C. Brainerd

Wm. H. Preece
 J. H. Russell
 J. M. Brainerd
 W. C. Brainerd

Personally approved by the following:
 19
 Chas. Matthews, John Brainerd, and others, and acknowledged the above to be the

187

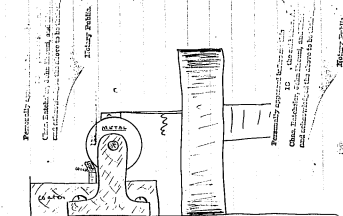
Menlo Park, N. J.

Secretary of the

T. A. EDISON.

18

T. A. Edison
Edison



A - joint made of Camotic chalk or other substance

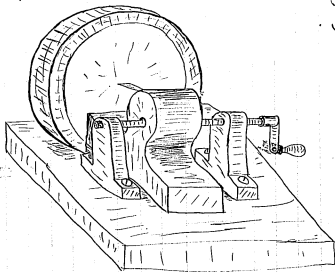
1/2 Speaking Telephone Receiver
Oct 4th 1878

Magnifying Glass
Johnnie
Ed. Edison
Copied on page 83. Vol 4
Exp. Researches Oct 28 1878
W. C. Cramer

T. A. EDISON.

Meinle Park, N. J.

20



Speaking Telephone Receiver

Oct 4th 1878

Edison

Magnifying Glass
Johnnie
Ed. Edison
Copied on page 83. Vol 4

Exp. Researches Oct 28 1878
W. C. Cramer

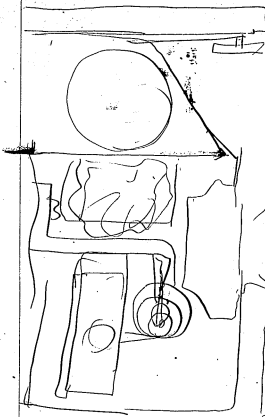
Primary Public.

Copied on p. 84 Vol 4
Exp. Researches Oct 5. 1878
W. C. Cramer

187

21

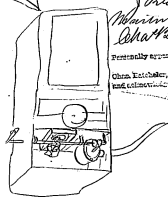
copy 7.1578



Sketch of P.M.
Edison's sketch
(Chas. D. Edison)
J.A. Edison
& E. C. Brown

Sketch of
Marion Force
Edison's sketch

Presently acquired before
10
Chas. F. Ketcher, John H. Ketcher,
and others.



Copies on page 86 80 of. Ed
Revised to 3079. 1876
H.P. Paman

Reading Telegraph Drawing
Oct 4th 1875

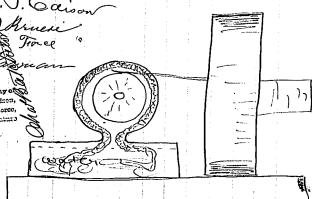
B.P. Edison

Sketch
Marion Force
& E. C. Brown

J.A. Edison

Presently acquired before
10
Chas. F. Ketcher, John H. Ketcher,
and others.

Notary Public.



Sketch on page 84 of 86 of
Ed R. 3079. 1876
H.P. Paman

T. A. EDISON.

Marion Park, N. J.

187

23

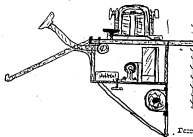
22

New Receiver

Pat 7th 1878

Edison

Edison



Ta Edison

W. B. Cannon

J. H. Kruess

M. M. Force

Edison

I have examined the papers of
Edison and find that the same
claim is substantially the same as that
and acknowledge the same to be true

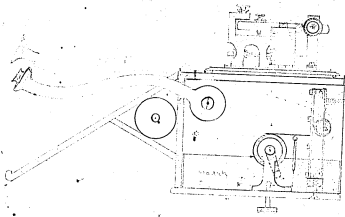
Notary Public

Copied on P. 85. Vol 4. East Research
et c. 1978 at Cannon

Oct 7th 1878

62

TAE



Telegraph Receiver

Wm. L. Edison

Charleston

M. M. Force

Ed. C. Cannon

Charles Johnson

Copied original - Fig. 1 of U. S. Pat. No. 217,000

Oct 21, 1894

Ed. Cannon

F

Oct 7th 1878

New Haven

Franklin

Chas. Ratcheter

Street & Puffin

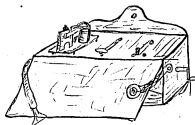
JA Edison

St. Louis

J. H. Kees

Wm. H. H. H.

Chas. Ratcheter



Personally prepared by me
for the use of the
Chas. Ratcheter, & am pleased, and
and acknowledge the same to be true

Henry Dobbie

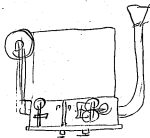


Collected on page 98 Joe P. New Haven
Chas. Ratcheter 5. 1878 W. Cannon

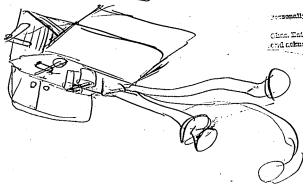
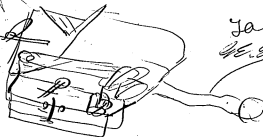
Oct 7, 1878

Charakteren
na. P. Edison

John
William



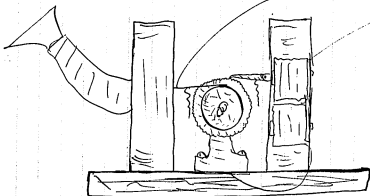
Franklin D. Piff
Ja Edison
W. G. Johnson



...essentially operated...
...to...
...Class. Machine, 20th...
...and...
...History...

Copied on page 90: Vol of Exp Research Oct 9, 1878
P. Edison

Copied on page 87, Vol 4
of Research Oct 9, 1878
W. G. Johnson



Memo Park, N. J.

L. A. EDISON.

Phonograph - Motograph Telephone Recd

Charakteren

Oct 9th 1878

John
William

na. P. Edison
1878
W. G. Johnson

36

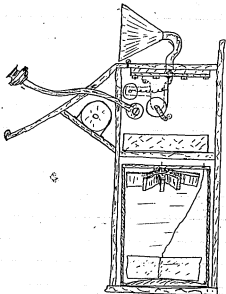
27

28

T. A. EDISON.

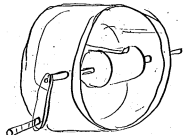
85

Menlo Park, N. J., 187



New Receiver

27
 Oct 9th 1876
 Chas. Batchelor
 John Howard
 G. E. Carman
 M. N. Force
 T. A. E.



Personally appeared before me this day of
 1876, the said Thos. A. Edison,
 Chas. Batchelor, John Howard, and Martin Force,
 and acknowledged the above to be their signature

Notary Public.

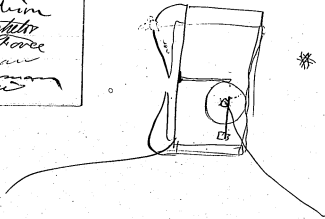
Working Telephone

Oct 10th 1876

Thos. A. Edison

T. A. Edison
 Chas. Batchelor
 M. N. Force
 G. E. Carman
 John Howard

30



Referred on 90 Vol 4
 for Reference see 12-1876

T. A. Edison

29

Mr. Reaver Oct 11. 75

has. P. Edison
J. H. Keese
J. A. Edwards
G. E. Cannon
M. N. Jones
Chas. B. Ketcher
J. H. Keese

Receipt for making Buttons for New Receiver -
10 - pounds of Chalk -
1000 grains - Acetate mercury -
20 - minimums - Caustic Soda saturated solution

T. A. EDISON.

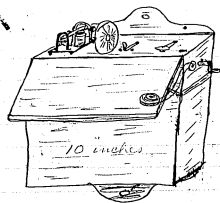
New Receiver Oct 14. 1875

Menlo Park, N. J., 1875

J. A. Edison
G. E. Cannon
M. N. Jones
Chas. B. Ketcher

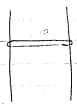
looked over page 91. Vol 4 Exp. Recor
Oct 14. 1875
M. Cannon

Chas. P. Edison



Speaking Telephone

Oct 10th 1875

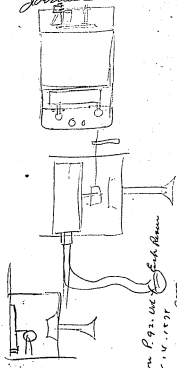
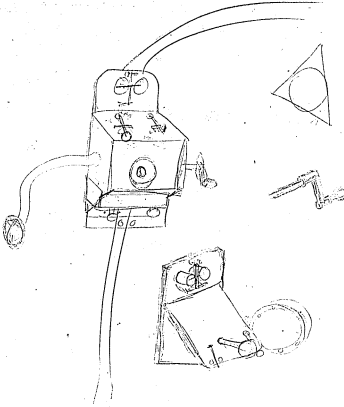


has. P. Edison
J. H. Keese

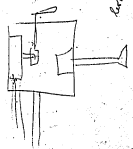
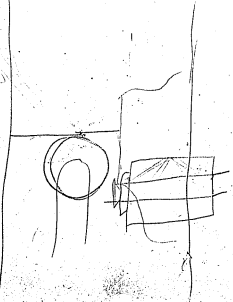
32

31

New Review Cor 12-1191
J A Edison
G E Cannon
M. M. Fines
Chaparral
Alameda



Refined on P. 92. 6/27
Dear 1. 4. 1937
G E Cannon



New Telephone Receiver

Nov 13. 1878

J. Bell

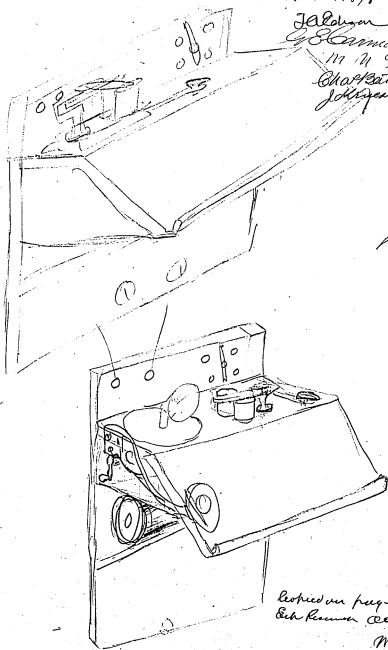
G. B. Brown

M. M. Jones

Chas. Ketchum

J. K. Jones

31



Revised on page 93 Vol 4
Bell Receiver Nov 14. 1878

M. M. Jones

34

Edison's New Telephone Receiver
Bracket for Same

Oct 13³² 1877

Chas. B. Ketcher

Chas. T. Edison

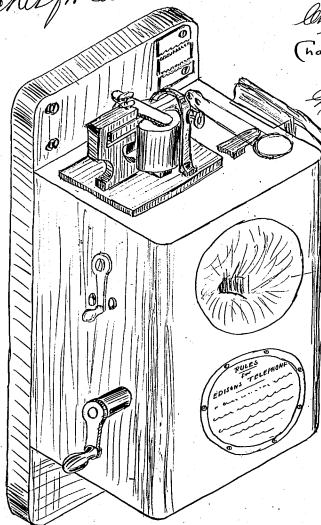
J. A. Brown

J. C. Cannon

M. J. Fox

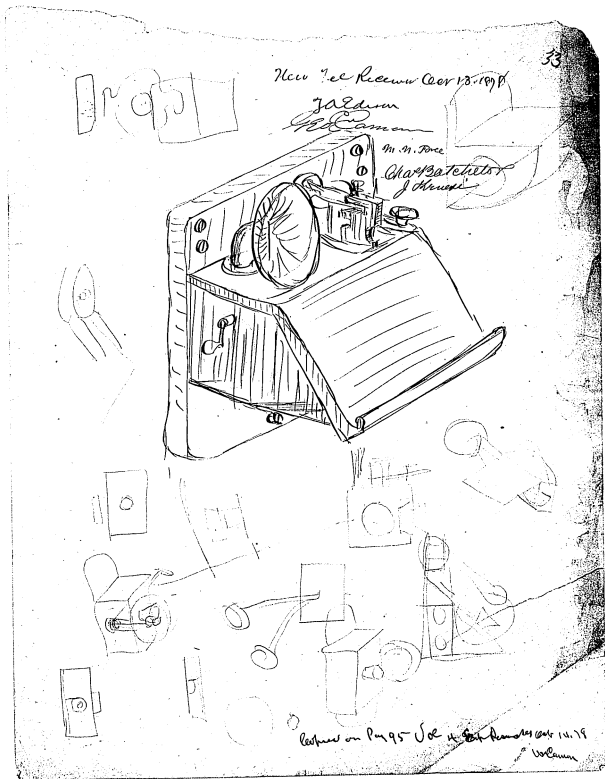
J. Schmidt

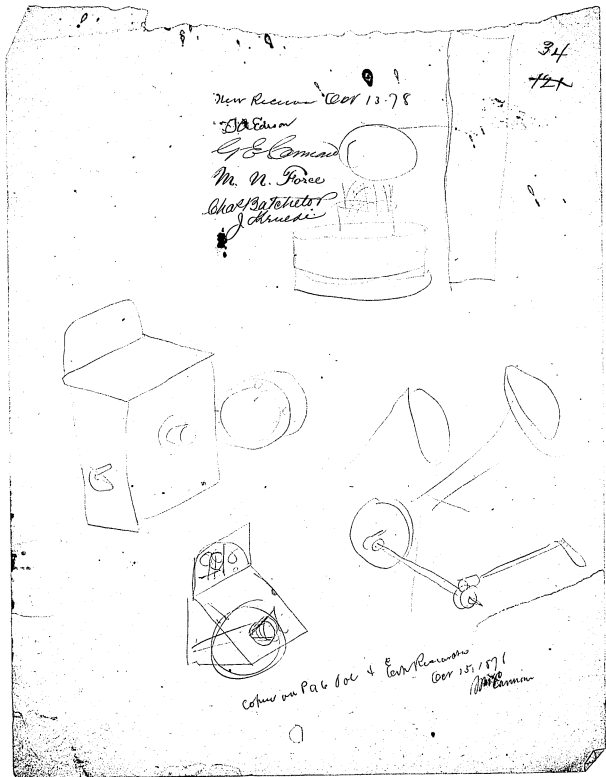
Thompson



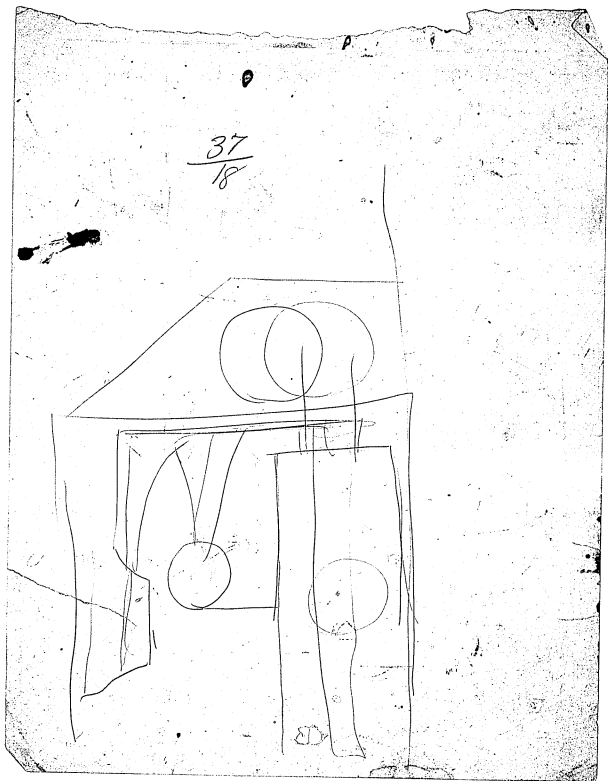
Listen

Coil partitions
off on inside





$\frac{37}{18}$



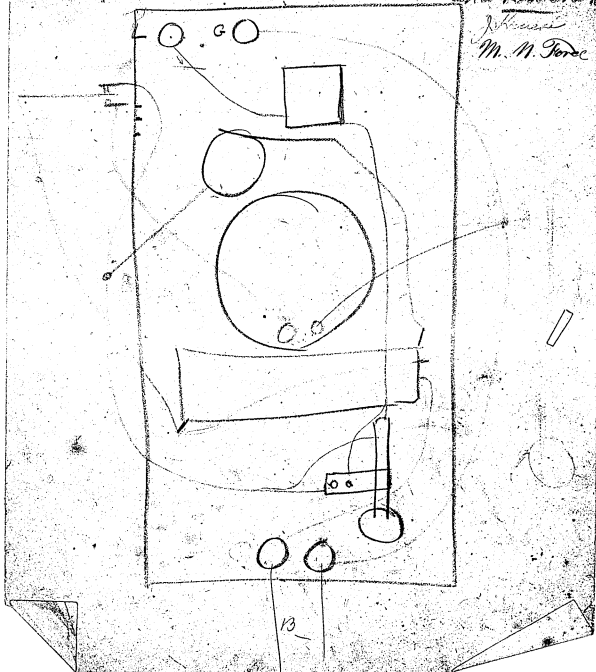
37

Carbo-Chalk
Telephone

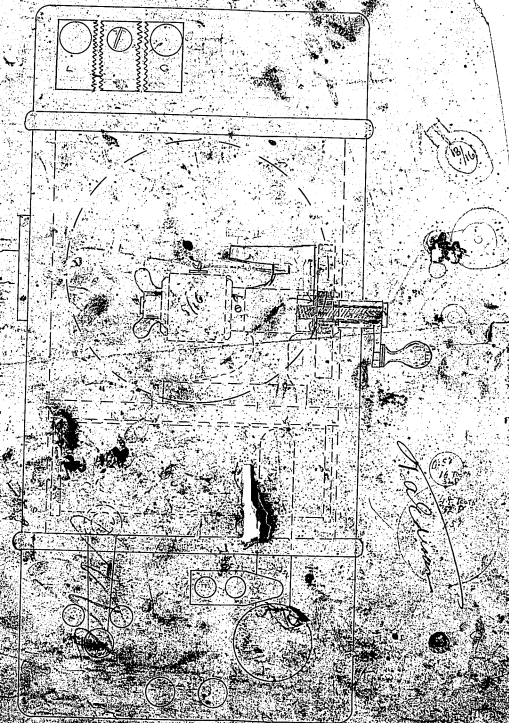
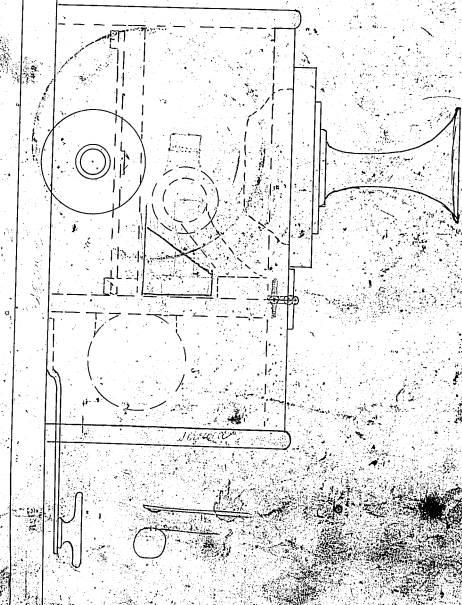
October 13th 1897

Carbo-Chalk

J. H. ...
M. N. Ford



Edison's Carbonate
Telephone Oct 13th 1878
Chas. Batchelor
J. H. Brown
M. H. Porey



Edison

T. A. EDISON.

Menlo Park, N. J. 187

Oct 14 1878

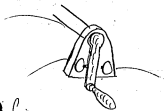
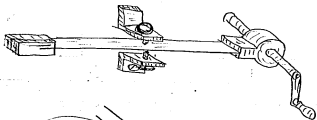
Automatic Switch for
Telephones

J. L. Case

has J. Edison

Mark Pathector

M. M. Force



40

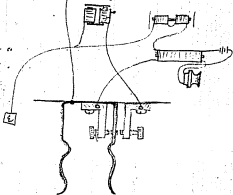
36

J. Edison

J. L. Case

M. M. Force

Mark Pathector



Automatic Switch
for Telephones

Oct 14 1878

has J. Edison

J. L. Case

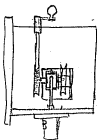
This must always put tubes up
& will make it drop before they can
Pathector

41

Carbo Chalk Telephone
or New Receiver Oct 17, 1898

Thos A Edison
Charles Batchelor

Johnnesi
M. N. Force



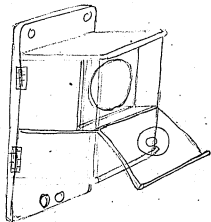
42

Carbo-Chalk
Telephone.

Oct 17 1898

Charles Batchelor

Johnnesi
M. N. Force



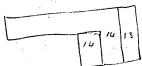
Thos A Edison

10 lbs

23 ft 3

25 ft diam -

25 ft



43

36
25
-11
11
11
11
11
37
37 1/2
2 1/2
6 5/8

Charles Chalk Telephone

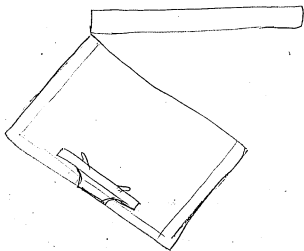
Oct 14 1898

Chas. Ratchel

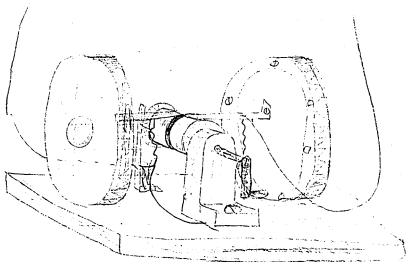
J. H. H. H.

M. N. Force

W. A. Edman



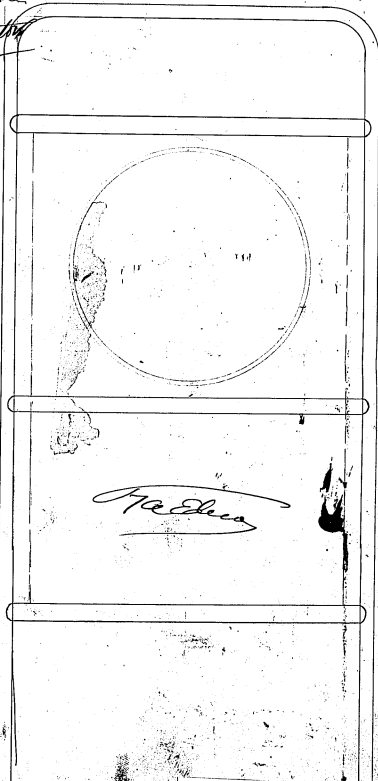
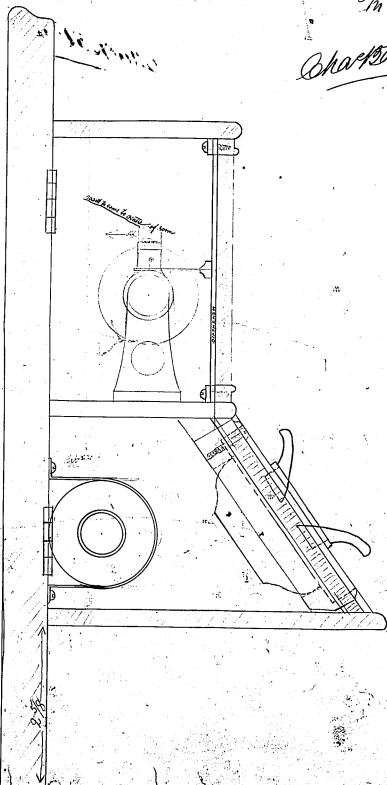
Operating Telephone
Oct 19th 1878
has. P. F. Deven



45

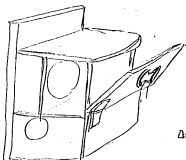
Inv. Recv. Estab. Telegraph American
Oct 21st 1888
M. M. Force

Chas. B. Ketchum

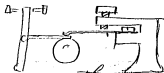


W. H. Huse

Will you start Woffat on this
box. You will see that the front is hinged that
holds the transmitter
I will be there soon



Will you also start out
for Hense a chalk holder
for the autograph like the
Make the chalks so that
they can
take them
off and put

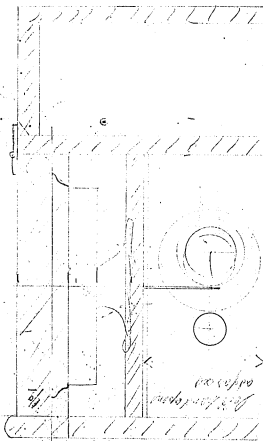


Another something same as the one I have drawn
for the other one "only" not so wide

B

Sketch autograph receiver previous to Oct 21st 1888

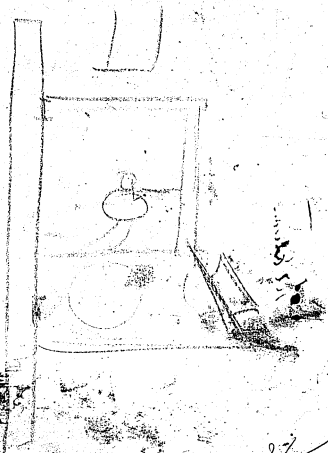
J. Huse
111 M. Force



Oct 23 1918
 William
 J. ...
 Mr. M. ...
 ...

...
 ...

...



87
077

Chalk Buttons New Receiver

Oct 22nd 1874

Wm. P. Edison

John M. Force
Chas. Batchelor

10 parts chalk - 1/2 gr acetate mercury - 50 min Caustic Sol

"	1 1/2	"	"	"	"
"	3	"	"	"	"
"	6	"	"	"	"
"	9	"	"	"	"
"	12	"	"	"	"
"	18	"	"	"	"
"	24	"	"	"	"
"	32	"	"	"	"
"	50	"	"	"	"

W. P. Edison

10 parts chalk 1/2 gr - acetate Mercury 60 min Caustic Solution

"	1 1/2	"	"	"	"
"	3	"	"	"	"
"	6	"	"	"	"
"	9	"	"	"	"
"	12	"	"	"	"
"	18	"	"	"	"
"	24	"	"	"	"
"	32	"	"	"	"
"	50	"	"	"	"

the above experiments with No 1 caustic solution
containing - 5 parts Caustic Soda and 200 water

Chalk Buttons for - Meco Records

Oct 20

Chalk Buttons
 Gas P. Edison
 Illinois

M. M. Force

The following experiments with no. 2 Caustic
 Solution - Containing 2 1/2 parts Caustic Soda and
 two ounces water

10 parts Chalk - 1/2 ^{grams} ~~ounces~~ mercury - 20 min Caustic Solution

"	"	1 1/2	"	"	"
"	"	3	"	"	"
"	"	6	"	"	"
"	"	9	"	"	"
"	"	12	"	"	"
"	"	18	"	"	"
"	"	24	"	"	"
"	"	32	"	"	"
"	"	50	"	"	"

7.12

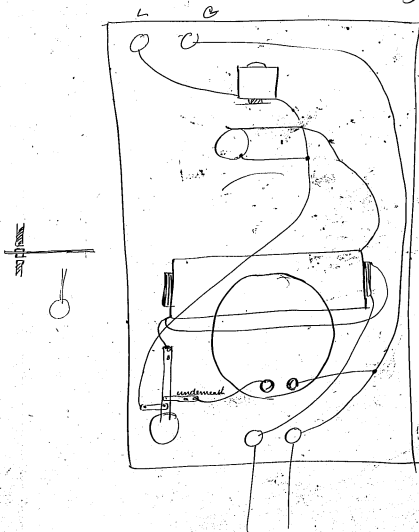
New Receiver Oct 22^d 1888

Connections

Johnson
Charleston
M. M. Force

7A

W. E. Hill



Chalk Buttons for New Receiver

has 1 disc

Chalk Buttons

M. M. Force

Oct 22nd 1878

10 parts Chalk - $\frac{1}{2}$ gr Animate mercury - 30 min Carotia Solution

1 1/2

3

6

9

12

18

24

32

50

of a Edison

10 parts Chalk - $\frac{1}{2}$ gr Animate mercury 40 min Carotia Solution

1 1/2

3

6

9

12

18

24

32

50

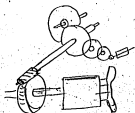
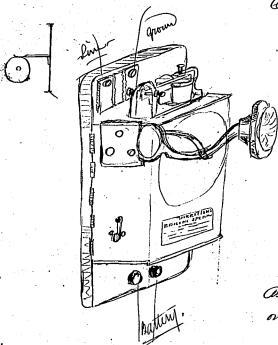
Telephone

Oct 26 1948

Char Batcher

711 Edison
Johannes
M.I. Force
Mesa

Make a telephone
this pattern and put
a clockwork inside to
run the "chalk" and
make the switch stop and
start it. Design the
chalk to be turned by a
worm as it will not
be strong enough without.
There is a strong pressure
on the chalk



I think you had better drive from the
second shaft and have only a few
teeth in the worm wheel.

Telephone New Receiver

Oct 27th 1948

Dishes made to receive on of = Chlorbutetolol
42 Gram Hg ^{act} 30 mm Na solution Chae P. Jenson
with very low but diaphragm squeaks J. J. Jenson

32 Gram Hg 30 mm Na constant - M. M. Jones
very low + diaph. squeaks

44 grams Hg. 30 mm Na TA E
pretty good + loud no squeak X

30 grams Hg 50^{mm} Na 50 mm Na
loud, needs a good deal of pressure though
very good. call it standard at present X

6 Grams Mercury 30 soda col
no good black

42 Grams Mercury 50^{mm} Na
loud, needs a good deal of pressure though
very good - good as standard X

30 Grams Mercury 40 Soda
Excellent. good but squeaks
best yet = Have to turn quiet. X

3 Grams Mercury 30 Soda
excellent good have to turn slow
not quite so loud but clear than previous one X

New Receiver for Telephone
3

Oct 24th 1948

Chas. Patchen

Joe P. Johnson

M. H. Johnson

= 30 grains Acet. Mercury. 20 minims Soda Solution

very poor. makes squeaking noise and when
you turn fast it almost entirely disappears
noise taking out

PAE.

= 6 grains Acet. Mercury. 40 minims Soda Solution

This is an elegant one, gives the natural voice
and requires no pressure to bring good for clockwork.
very loud: squeaks a little

= 42 grains Acet. Mercury 20 minims Soda Solution

Not good enough - fair artec. but too low

12 grains Acet. Mercury. 20 minims Soda Solution

poor not loud enough

24 grains Acet. Mercury 40 min. Soda Solution

no good

18 grains Acet. Mercury 20 min Soda Solution

No good

New Receiver for Telephone
Continued 2

Oct 27th 1948

Chas. Patchell

Chas. J. Mason

J. Brown

36 grains Acetat-Hg and 40 min Soda Solution
too low to be of use - no good -

3 grains Acet. Hg and 40 min Soda Sol. M. M. Power
pretty fair but not up to standard

42 grains Mercury 40 Soda solution
no good

A a c

18 grains Mercury 40 Soda solution
very good when turns slow - diaph. squeaks X

36 grains Mercury 20 Soda solution
muddling fair articulation - makes considerable noise

24 grains Mercury 25 Soda solution
pretty good. seems to want to rattle diaphragm X

36 Mercury acet 30 Soda solution
Bang up, good best yet!!! loud & clear XXX
Borked

12 grains Mercury 30 quin Soda solution
not very loud but works with light pressure

New Receiver for Telephone
4

Oct 27 1918

Chas. T. Raymond
J. H. H. H. H.
M. M. Jones

3 grains Acet. Mercury 20 Soda Solution
Fair but low

18 grains Acet. Mercury 30 Soda Solution

This is the best of the kind very loud
and clear but it makes the diaphragm
so that it rattles.

12 grains Acet. Mercury 20 Soda Solution

No good, not loud.

Set the two best in the instruments and
left them

Telephone, New Receiver

Oct 28th 1948

Chas. B. Batcher

Discs composed of.

Chas. B. Batcher
John
M. M. Force

Acetate of Mercury

We found that the current in line goes out through the transmitter, but enough battery current also escapes through to affect the autograph very considerably & that by putting an extra cell in line & not changing the line or battery wires we can get excellent talking

12 Acetate Mercury 50 Soda Solution
Not loud but good figures were further out
JAE

24 Acetate Mercury 50 Soda Solution

18 Acetate Mercury 30 Soda Solution
Mounded with heavy pressure — X
Very good, excellent

Same with light pressure
Not so good as the 18/30.

30 Acetate Mercury 50 Soda Solution
Pretty good but not so good as 18/30

New Receiver (to Edison)

Chas. P. Edison

Oct 28 1878

Chas. P. Edison

Idemati
M. M. Jones

3 quarts acetic - 40 min cathodic solution - to put bath -

60 -

12 -

18 -

24 -

30 -

36 -

42 -

Chas. P. Edison

T. A. E.
Chas. P. Edison

Telephone
New Receiver

Oct 28, 1898

Charles A. T. Hester
Charles H. Hester

- 12 Acetate Mercury 50 Soda Solution
pretty good but not loud enough. H. M. Gorse
J A E
- 36 Acetate Mercury 50 Soda Solution —
not so good as it ought to be
too low
- 36 Acetate Mercury 40 Soda Solution
Not good Have to him turn too quick.
- 12 Acetate Mercury 40 Soda Solution
Good not very loud but clear
wants very little pressure won't work with hand. X
- 6 Acetate Mercury 50 Soda Solution
No good
- 42 Acetate Mercury 50 Soda Sol.
Good. just rate loud & clear
good artic. X
- 30 Acetate Mercury 20 Soda Sol.
No good

New Edison - Telephone

Oct-24th 1878

Wm. P. Edison
Jennings

M N Ford

T & E

Chas. Batehater

acetate	3 ga.	20. min Caustic Solution	10 part Chalk
Mercury	6 "		
"	14 "		
"	18 "		
"	24 "		
"	30 "		
"	36 "		
"	42 "		
"	3 ga.	30 min Caustic Solution	10 part Chalk
"	6 "		
"	12 "		
"	18 "		
"	24 "		
"	30 "		
"	36 "		
"	42 "		

very low —

very low —

Telephone
New Receiver

Oct 30th 1918

W. A. E.
Photographer

- 24 Acetate Mercury 20 Soda Solution ^{Charles Pearson} ^{W. M. Ford}
Good, nothing extra but pretty good. Johnson's
12 Acet. Mercury 50 Soda Solution ^{W. M. Ford}
Very loud, rattles bad try thicker diaphragm
6 " " 20 " very fair, clear and good #
42 " " 30 " good, loud, rattles

Put in thicker diaphragm (twice as thick)

- 3 " 20 best yet No 2 solution ^{spicy so red}
hot for articulation ^{Imp for test}
18 " 20 Just as good as above
6 " 20 -- loud but poor articulation
18 " 40 -- loud but poor articulation
42 " 40 -- same what better
12 " 30 -- ditto
6 " 20 -- the same as 3 = 20

(How in this?)

It seems to me that we want a greater percentage of
panetic soda in the "chalks". So make a concentrated
solution of it and try 3-20 on it -

Telephone Receiver

Oct 30th 1898

A. E.
Chapman

Test for

Constancy of the one used last night (has P. Edison
Admired)

42 Grain Acetate Mercury 40 Laurate Soda Exp. M. M. Force
hung up on thin diaphragm but rattles a little -

42 - 40 on thick diaphragm not so good
We have set this in a box 8 for constancy at 11 p.m.

- ~~9~~ No 2 Sol. Very loud. in No 1 box
18 - 30 (~~not constant~~)
12 - 30 (No 2) Loud but no articulation bet.
24 - 20 " same as ~~above~~
18 - 40 (No 4) loud but no articulation
6 - 20 -

a point like this -



No 9. makes it vibrate just as much -

New Receiver Oct 31st 1876

W. D. Johnson
M. M. Jones

6 acetate Mercury and 20 Caustic Soda if number
(3) - works very good - with pretty good pressure
lay. for permanency

Acetate Mercury 18 and Caustic Soda 30 - of No 4
is fair but not very good - improves in using

Acetate Mercury 16 and 30 Caustic of No. 3 Solution -
busted in putting in but tried with peice and seemed
to worked good

A 18 Acetate Mercury and 50 min Caustic Solution
to much Caustic Soda. Busted before trying it

3 acetate Mercury and 40 Caustic Solution
works rather low - lay them all in the
New ones being made

18 Acetate Mercury and 40 Caustic Soda: works fair
It gives very good articulation but low when the wires
are reversed.

Telephone Receiver

TAE
Oct 31st 1898

Chas. Carson

Idheresi
Chattanooga

- X X 9-30 No 2 on small diaphragm in ^{in force} ~~in force~~
fan left in for test 5 AM Nov 1st Box 5. M. M. Force
- X X 12-30 No 2 on thickest diaphragm
very low but excellent talking - left in box
2 for test

Nov 1st 1898

No. Box	Chart	Oct 31 st	Nov 1 st						
1	6-20 No 2 <small>Small cup in</small>		very poor dead in sound						
2	12-30 No 2 <small>Thickest diaphragm</small>	low but good talking	very poor but if closed not low						
3	3-30 No 2 <small>Small cup</small>	Good.	Good up low						
4	18-48 No 3 <small>Small cup in</small>	Good	Good up low						
5	18-30 No 4 <small>Small cup in</small>	Good but	Good as it low some resistance						
6	6-30 No 1 <small>Large cup with ink waste</small>	Bad yet	about same as 3 rd						
7	3-20 No 1 <small>Small cup in</small>	Good.	Good up.						
8	9-30 No 3 <small>Small cup in</small>	Good but low	Good but low						

We now put large cells water in each unit
Waste to see if any change
tomorrow night. Force 6 or only one for

Telephone Receiver

Oct 31 - 1898
Chas. P. ²⁸ ~~28~~ ²⁸ ~~28~~
Chas. P. ²⁸ ~~28~~ ²⁸ ~~28~~
Chas. P. ²⁸ ~~28~~ ²⁸ ~~28~~

Chalks made from 3rd Act. Merc. + 30 minutes ^{in 100% Caustic}
Soda Solution of different strengths M. M. Force

- No 1 - Soda Solution is 5 dwet Caustic Soda 20, #20
- 2 - " " " 2 1/2, " " " "
- 3 - " " " 20 " " " "
- 4 - " " " 10 " " " "
- 5 - " " " " " " " "

3-30 No 4 Sol.

Good. best articulation, on 4" diaph. on 3" (Box no 3)
diaph. Busted now

X 3-30 no 3 sol. (3x no 8) fair articulation but
low. Sepr in for permanency 11 PM Oct 31st

X 6-30 - no 1. Rosengarten - (3x no 6) - Bang up. so far,
quoted, X

X 6-30 no 1 ^{much} about as good as Rosengarten -
this is in for test 3 AM Oct 31st

6-30 - no 2 on small diaph. good elegant but busted it
so we could not keep it

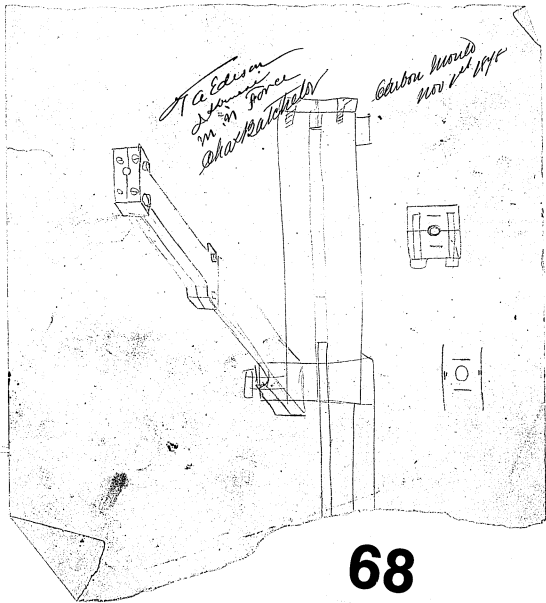
9-30 No 1 Busted before putting in box

X 18-30 No 2 Box 4 in for test No 1 3 AM

X 3-20 No 1 Made 28th Oct put in tin for 1 + put in for test
Box 7. Oct 31 11 pm

X 18-30, No 4 put in 12 m. Oct 31st in Box 5

X 3-30 No 2 Busted



68

Telephone Receiver
Continued

Nov 1st 1919
J. A. E.
Chas. Ketcher
Chas. E. Dixon
J. M. Davis
M. N. Fara

— 42^{9th} 30 Soda Sigs
No 4
poor (Busted)

— 18th 20 No 3 Sol.
very good, but not so good as the
old original

— 36th 20 No. 3 Sol.
very fair but not up to standard

— 3th 20 No 3 Sol
this we think is good but the hole is too big
for shaft we make another one of this +
try it

— 6th 30 - No 3.
loud (exceptionally) try it on other machine

3th 30 No 3.

good + loud
we tried the diaphragm in Paraffin but
it apparently was just the same -

New Receiver - Nov 1st 1876

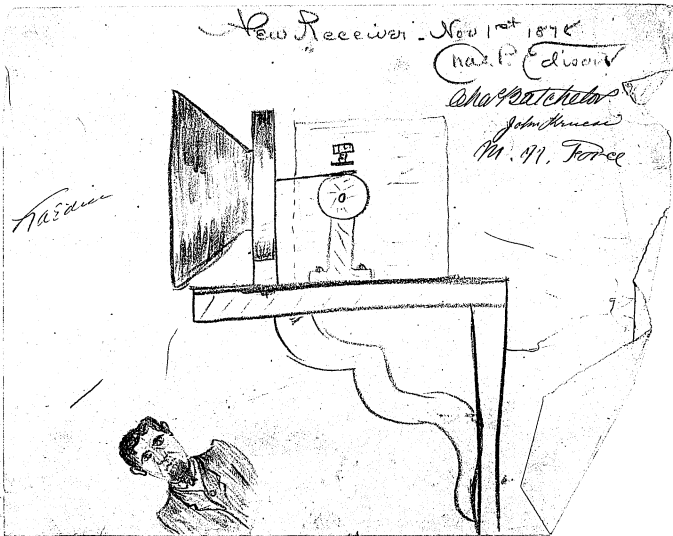
Na. P. District

Chas. Ketchum

John H. ...

No. 97, Force

Radwin



70

Telephone Receiver

Nov 1st 1898

Continued

JAE

Chas. Arson

J. H. H. H.

M. H. H. H.

Chas. H. H. H.

12th - 3 Soda 20 No 11
Not bad but very fair

26th - 40 No 3,
No Good at all

30th - 20 No 3
Good but not Good enough.

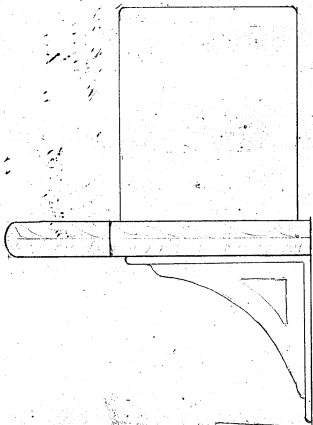
6th - 30 No 1 Sol.
Bang up just as good a original!!!

All chalks made with strong solutions of
poda are much more brittle than those
made before.

6 AM. Nov 2nd 1898

New Receiver for Telephone Nov 2^d 1888

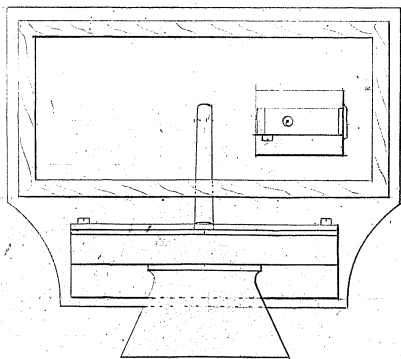
J. H. Smith
Chas. H. Hatch
M. M. Force



72

New Receiver for Telephone Nov. 20 1878

*Johnnie
Sharpshooter
M. M. Stone*



Receiver

November 20th 1898

Chas. J. Fison
Charleston

Experiments for the 21st Mr. M. Force
Hawaii

wet button through and see if it will do any
good to put in resistance in line

make wooden sleeve in ahead of Brass one now
used and see if can get current when wet

see if the receiver works better if the transmitter
is adjusted with more resistance when the button
is wet

take button wood $\frac{1}{2}$ inch dia and $\frac{1}{2}$ mold, about
 $\frac{1}{2}$ inch plaster Paris on out side moisten with
Caustic and try

try the above with brass core with cap of wood
on -

Thomas

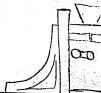
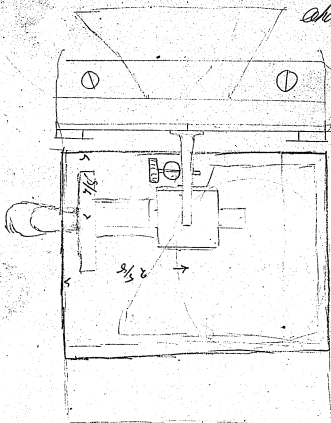
find resistance of button when
through ~~with~~

also resistance when dry -

The Receiver of Telephone No. 20 1878

Explains & Shows

*M. M. Force
Chas. Batchelor*

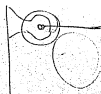


*New Receiver New Receiver
Pat. 511 1878*

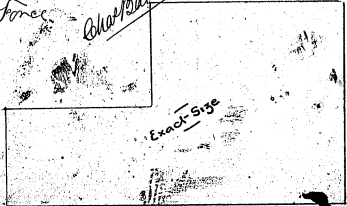
has P. Edison

*M. M. Force
Admission*

*7 A Edison
Chas. Batchelor*



75



Exact Size

1 inch deep

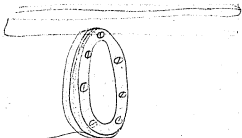
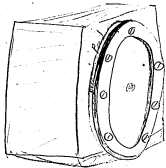
76

New Receiver.

Nov 5th 1878

Chas Edison
Johns

WAE
Chas Edison
M. M. Jones



Discs of Blotting pads - 2 thickness inserted
between the diaphragm and the box - to give some
to the sound of the cylinder & the vibrations of the
diaphragm - to the box - etc.

How Given

November 5th 1870

How Given
J. H. H. H.



strip
M. H. H. H.
H. H. H. H.
H. H. H. H.

Charles H. H. H.



New Receiver

November 5th 1874

Wm. J. Garrison

The following course of Experiments with ^{attached} ~~attached~~ ^{Charles} ~~attached~~ ^{catcher} ~~attached~~
different pressures given to the buttons -

6-30-101 - Very light pressure - to soft - burst before
trying it -

6-30-101 - light pressure -

6-30-101 - Heavy pressure - in box no 6 -
works bang up - I think better articulation than
any heretofore - left in for permanency -

6-30-101 - Very heavy pressure - in box no 5 -
just as good as the above - left in for permanency -

6-30-101 - ~~light~~ moderate pressure -

T. A. EDISON.

Menlo Park, N. J., Nov. 7th 1878

Experiments T. Edison
^{James}
Chas. S. Satchel
M. W. Force
Test resistance of the best
chalk you have when
talking good.
Resistance of same when
dried a little.

Have Martin adjust a
transmitter for best talking
and get two alike to work
with

Put rubber between the ring
and diaphragm.

Use a thinner diaphragm
of same diameter if not
good of iron then of rubber,
fibre or of tightly stretched

New London

7th 1841

H. C. E.
m n ^{James}

Chart Batchelor

Dear Sir

I have the honor to acknowledge the receipt of your letter of the 2nd inst.

in relation to the matter of the ...

I am sorry to hear that you are ...



The ... (with a ... hand) ...
it is ...
water ...
back ...
supply of ...

with waste in and it has been
all night.

to take a number of
the
of
the
the
the

TAE
m n ^{George} _{Johnson}

Chas. B. Betchel

Raw
to

()

in
with

in Box No. 5 - a 6.00. not - passed on the
with glass, but very low

in Box, a 6.00. re. with some
which but good

M. D. Price

Handwritten

Continued from the other side
of the book.

Chorale

Al

at a $35\frac{1}{2}$ level hardly
hear it.

took it a short back a gain and
it is better but not -

with the transmitter at $35\frac{1}{2}$ it is not hot for
tube instrument when I put ear to diaphragm the
talking and articulation is excellent, it seems
best when turned "just as slow as possibly can
move - think this will be good for about
movement, not slow enough for the present
boxes we are using.

Paul Pinciner -

Nov 9th 1917

(has. P. Collins)

M. W. Pinciner

boxes No 4 and 6 with 6c 20 - No 1 - in with
Paste board in one and small sponge in other hand
Kept constant for three days - having been put
in on the 6th inst - and talk very good this
morning -

Chas. Batchelor

TAE

~~to determine the resistance of the transmitter
which gives the best talking on 6.30. No 1 which
was put in on 6th inst~~

to determine the resistance of the transmitter
which gives the best talking on 6.30. No 1 which
was put in on 6th inst

New Recinn

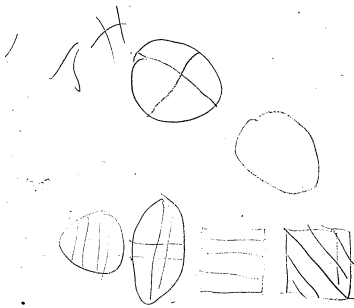
no. 94 1878

Chas. Edison
M. N. Ford

Put one of the sponges on a l. s. no. 1 so it doubled
against and in about 100 hours it was done
with a very good result -

Chas. Edison

F. a. E.



New Providence

Nov. 19th 1870

Chas. J. Johnson

Experiments with different diaphragms with a 6.50.
out. button - -

Hard rubber diaphragm - does not change the talking
very much - although think it helps the articulation
a little -

vulcanized Fibers - dont see much difference between
it and wood -

Carbon plate - about quarter inch thick is being
up - good articulation -

thick mica - is very loud louder than Carbon and
wood better articulation than wood and louder than
wood - but not as good articulation than a Carbon
but for general purposes is desirable -

wood 1/4 thick - not good results to low and not
striking articulation - gives hollow sound -

New Edition

Feb. 19th 1875
D. G. Johnson

~~Buttons~~

6 blocks Buttons of 6.30.701. with small amount
of glycerine no great change

Button with glycerine instead of water
is very soft hardly hear it - plays out -
did not put any water in box - large amount
of glycerine was used

Button with small quantity of glycerine
was harder than above but was still
satisfactory

do not know that I had an idea some days
X and put in box with him sulphur and it
started off good but seemed to have only a
little ~~of~~ sulphur on outside and
soon played out - have left in to see if
it will come up again -

have taken water out of the other two
boxes to see if is not too much dampness
instead of not enough

when water is taken out of the two boxes they get
worse and get quite hard. I put little water in
the button and put it in box again in box again
when it was used good

How to make

November 13th 1876

Diaphragm

Chas. P. Alison

Zinc Diaphragm about $\frac{1}{8}$ thick - is no good
Very low -

Thin Mica Diaphragm wants very good not much
difference between that and thicker - Gr.

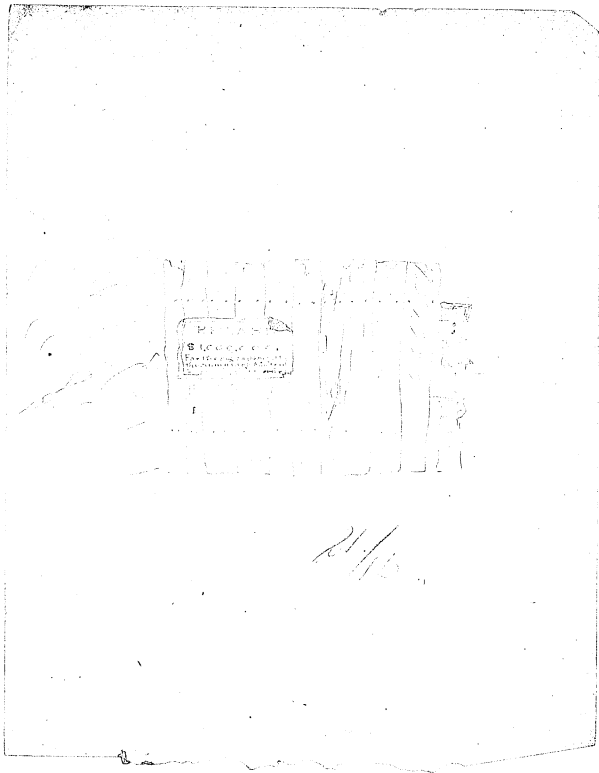
How to make

November 14th 1876

Put on no 6 and shellaced both in Chas. P. Alison
and outside to see if it will keep button
from getting dry

... wants to be dry on
the inside and slightly

half put in no 6 & button in box no 6
it gave very fine talking when put in
and sealed up - will continue to see
if it will keep button -



New Preciser

Pod 15th 1275
Khemendruph
Cannadrum

Have been testing transmitters today and find the sudden decrease in the volume of sound is caused by the adjustment of transmitter when I took transmitter when could get but very low talking and changed adjustment until it came good again and it attend that way for half an hour when it suddenly went very low and I adjusted transmitter again and it came bang up again. ~~think~~ think it is a crackle in diaphragm - have kept it for new diaphragm

to \$100,000

at \$100,000 in my mind

but I'm inclined to think in about 100 and got a Sendib speaking - not quite as loud as when one is in singing

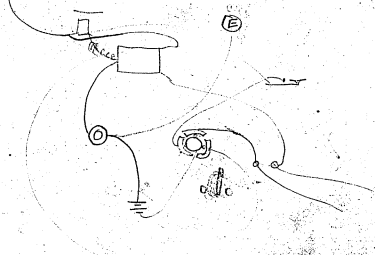
noticed quite some noise from (eg) wheels in box - and suggest friction ~~is~~



New York

November 16th 1875

Chas. P. Smith



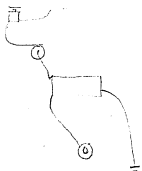
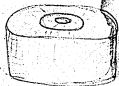
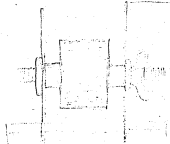
New York

November 11th

November 21st

Baltimore

Char. Batchelor
M. A. Jones
Johnnie



95

94

A. D. ...

Nov 26 1871

Boston

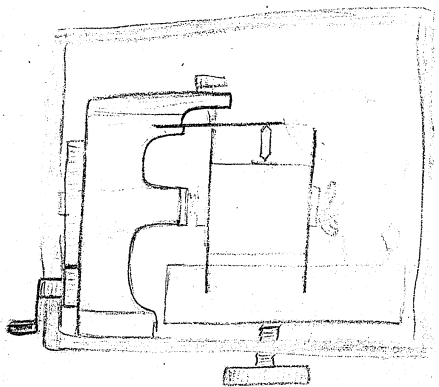
Boston

Wm. J. ...

Boston

Boston

115 ...



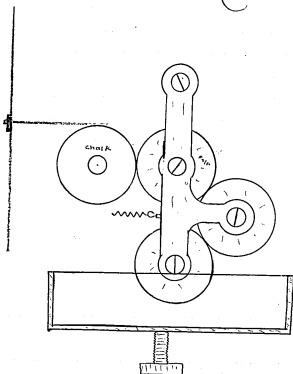
Boston

T. A. EDISON.

Menlo Park, N. J. _____ 187

New Jersey

*Nov 28th 1878
T. Edison*



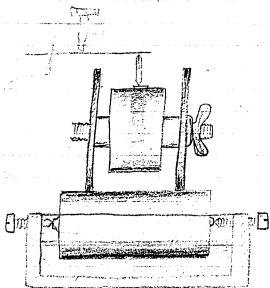
*For circulating mixture
of bitum*

97

T. A. EDISON.

Menlo Park, N. J. _____ 187

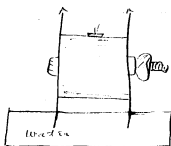
*Nov 28th 1878
T. Edison*



*full water feeds water on Pearson Paris
disc*

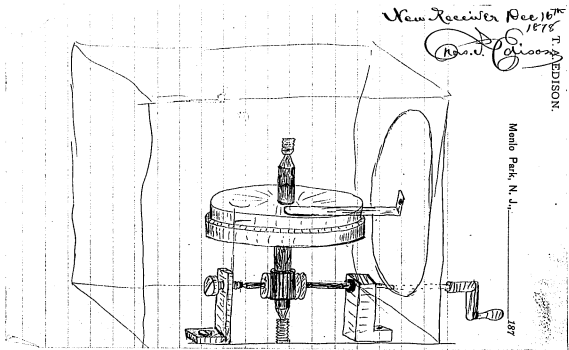
98

Receiver. Dec 2nd '76
 (has Edison)



Blowing and rises A.A.
 resulting in water -
 too much water supplied.

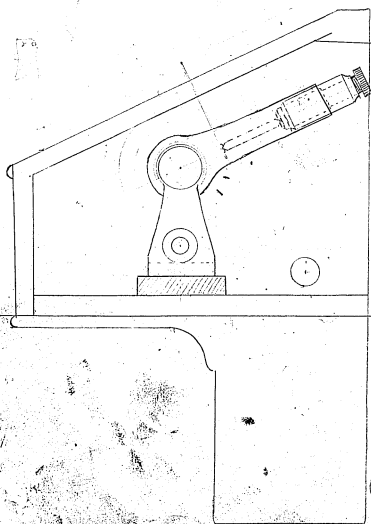
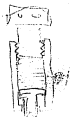
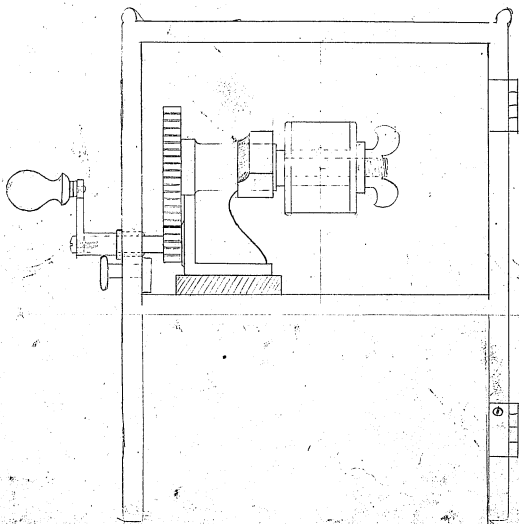
99



Menlo Park, N. J., _____ 187

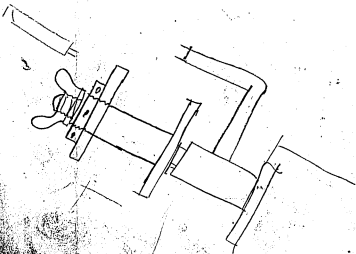
100

New Recor.
April 17th 1849
J. A.



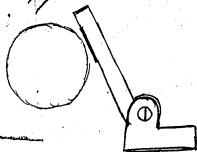
W. Brown Telephone

101
81



101

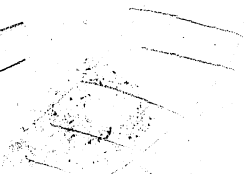
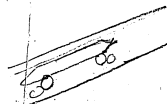
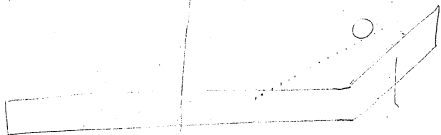
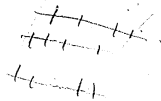
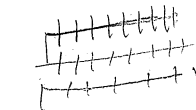
New B. Telegraph.
May 24th 79



103

36 1424
3 5280

$\frac{103}{18}$



14.5
14 30
28
20 100
175

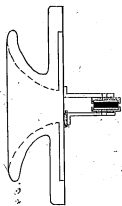
17280
10 = 790
18776
1776

1000

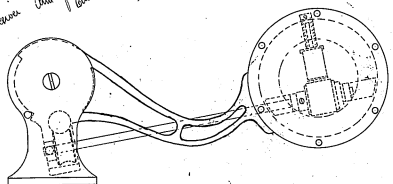
3000
150
21000
2000
35 540, acc
770

103

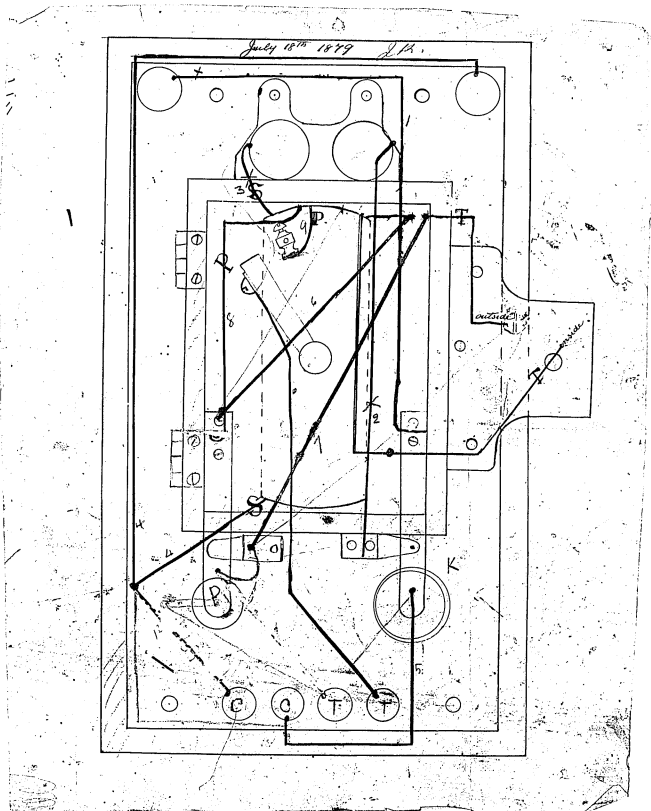
Transmitter for
Radio Free World
July 12, 1942



Receiver for
1/4 P.P. Model for
Radio Free World



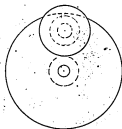
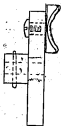
See
208.



July 21, 1879
J.H.

NEW RECVR. TELEPHONE

4. 11. 11. 11.

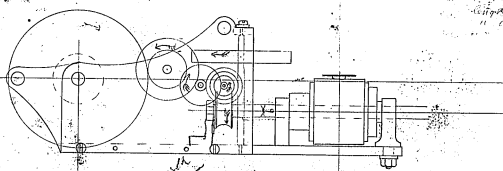


106

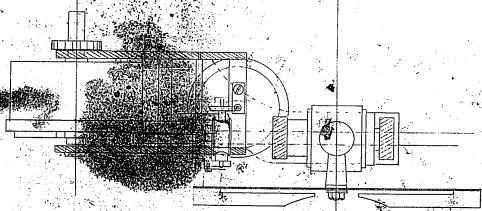
Clap. 20TH 1847

Handwritten notes in the top left corner, including "S. J. ...", "1847", and "1848".

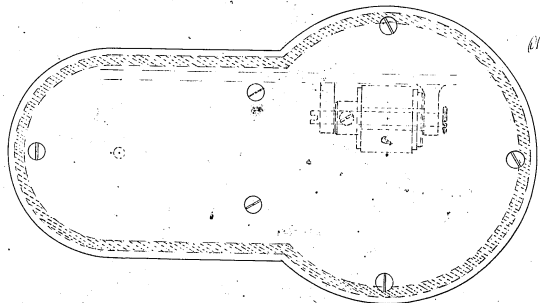
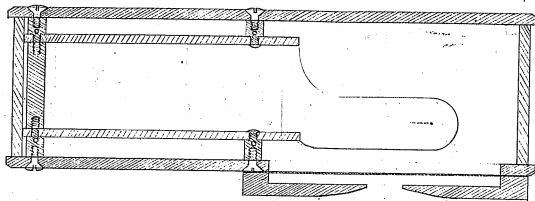
Top flange 1/2
body 7/8
bottom flange 7/8
width of feet 1 1/2
in. diameter 7/8



Handwritten notes: "B. Schmitt", "T. Schmitt", "Aug 1847", "for 1848".

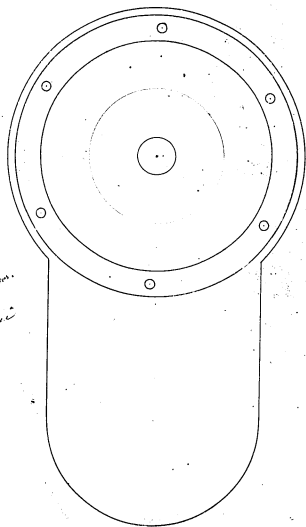


107



Microscope Arm.

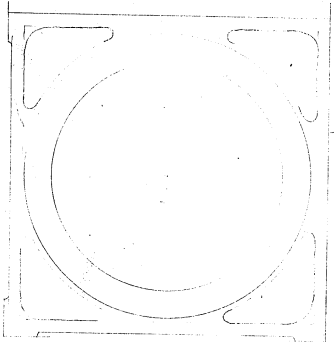
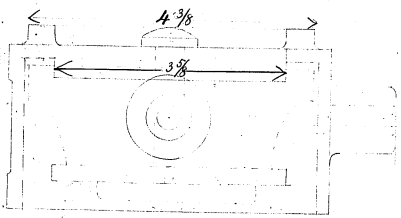
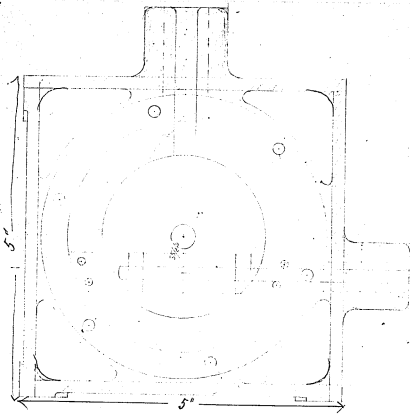
J. Brown



*Edison's
Laboratory
Newark, N. J.
August 26th 88
S. A. Mott, D.*

John W. L. Little

108



Figs. pattern size
New Room. Telephone
J. Brown
Sept 49

$\frac{11}{601}$ $\frac{109}{18}$

109

[ON VERSO:] "New Receiver"

110

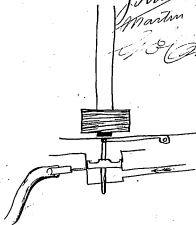
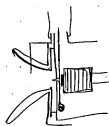


Prescott

New Receiver

Chas. DeWitt

7th Edition
J. Russell
Martin
G. S. Cannon



Personally appeared before me the City of
25
Chas. DeWitt, of the County of
and acknowledged the above to be his signature.

Notary Public

11713

[ON VERSO:] "To hand Apr 20, 1880 Wm Carman"

111

Looked out page 98 Vol 4 of Ethn Researches Oct 6. 1896

W. Cannon

Telephone Receiver

Chas. P. Edison TAE

Experiment to find out whether ^{the magnetic force} No 3 or 4 solution of Caustic Soda is best for the Chalks

No 3 is 20 dwts Caustic Soda + 2 grs H₂O
No 4 is 10 " " " " "

— 3 grains Acet Mercury 30 of No 4 Chas. P. Edison
— Stated off good but played right out

— 42 grs Acet. My 40 No 3 —
— No good. —

— 6 grs Acet My 40 No 3 —
— No good busted

— 24th — 30 — No 4
— Clear, good but too low

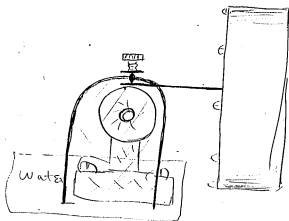
— 18th — 40 No 3
— loud but no articulation

— 6th — 30 No 4
— very loud indeed (busted)

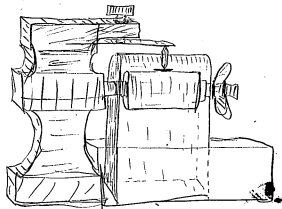
— 18th — 30 No 3 —
— pretty loud fair articulation but it busted



[ON VERSO:] "To hand April 20, 1880 Wm Carman"



TAE
Chas. Batchelor
Inventor
M N Toroa
Chas. (a)ison



T. A. EDISON.

Menlo Park, N. J., _____ 188

discs of wood take ten
much better -

Form

[ON VERSO:] "Came to hand again April 20, 1880 Wm Carman"

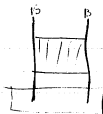
113

114

Wm. A. Edison

T. A. EDISON.

Menlo Park, N. J., _____ 187



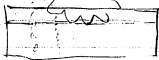
thin plaster paris dies
 gives to which
 water



plaster paris dies
 with burdon cut thin
 way in ends
 too much water

Same as above with only
 one die in water is better

die cut this way is better
 as it does not take
 up so much



T. A. EDISON.

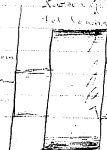
Menlo Park, N. J., _____ 187

How to the water

Now is the water

187

Are are you some kind of a water...
 are are you some kind of a water...
 are are you some kind of a water...



the sample
 of the
 water

Edison

Some of the water...
 some of the water...

H. K. ...
 M. ...

Chit Pratchata

M. M. Torce

J. K. ...

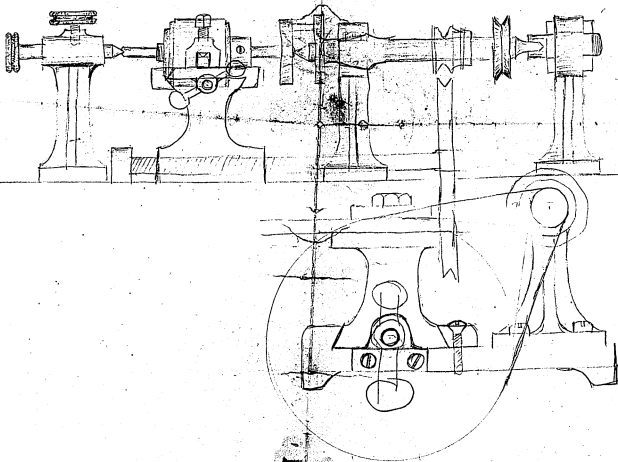
[ON VERSO:] "To hand Apr 20, 1880 Wm Carman"

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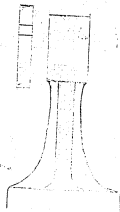
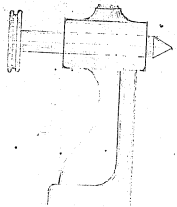
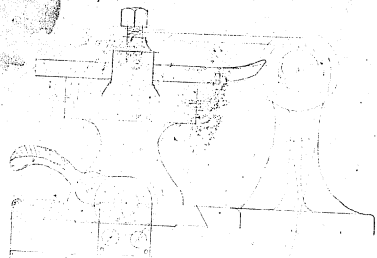
[ON VERSO:] "Came to hand Apr 20, 1880 Wm Carman"

115

Chalks Telephone
JK



117



Chalk Telephone

7x3

15

23

118

New Receiver

Char. P. Edison

Johnnie M. N. Foster

no hand
19.1.1860
18
18
18
24
36
60
3
18
3
42

Acet. Merc. 50 Soda Solution NO 2
~~Good~~ 100 soft ^{partly} heavy pressure for good talking

NO 2 Solution is 2 1/2 penny wts. Caustic Soda 2 of H₂O
 No 1 " " 5 " " " 2 of H₂O

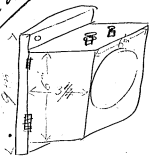
- 36 Acetate mer. 30 Soda Solution - low - TCE
- 12 " " 20 " " Low
- 24 " " 60 " " Low
- 6 " " 40 " " Low good as any
- 6 " " 30 " " Low
- 18 " " 60 " " Low - u.g.
- 18 " " 30 " " u.g. - Very low
- 24 " " 30 " " u.g. - Very low
- 36 " " 20 " " is very good but the diaphragm makes
- 60 much noise that it can't be understood
- 3 " " 30 good at first but plays out -
- 36 " " 40. good, loud not much pressure on
- 42 " " 20 squeaks, low. put on thick diaph.
- 30 " " 40 loud but poor articulation
- 36 " " 40 loud, good articulation. light pressure #
- 18 " " 40 loud. wants a stiffer diaphragm
- 3 " " 20 loud, very good. want a thicker diaph #
 very little pressure. follow this up
- 18 " " 20 very good. very little pressure. #
- 3 " " 20 just as good as other 3.21
- 42 " " 40 No good loud but rattles too
 much, try it with thicker diaph. X

1600
1500
2000
1200
4100

Came to hand before 1911
Mr. Case

W. H. Case

pat



Make 6 of the boxes that
are for trying the chalks
as receivers.

Hinge the boxes like a chest
& only put inside the receiver
with two brass pins on top
I shall want to put them up
on the wall side by side

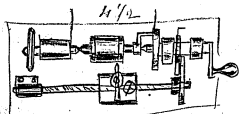
E. B.

Johnson
M. M. Force

without any...

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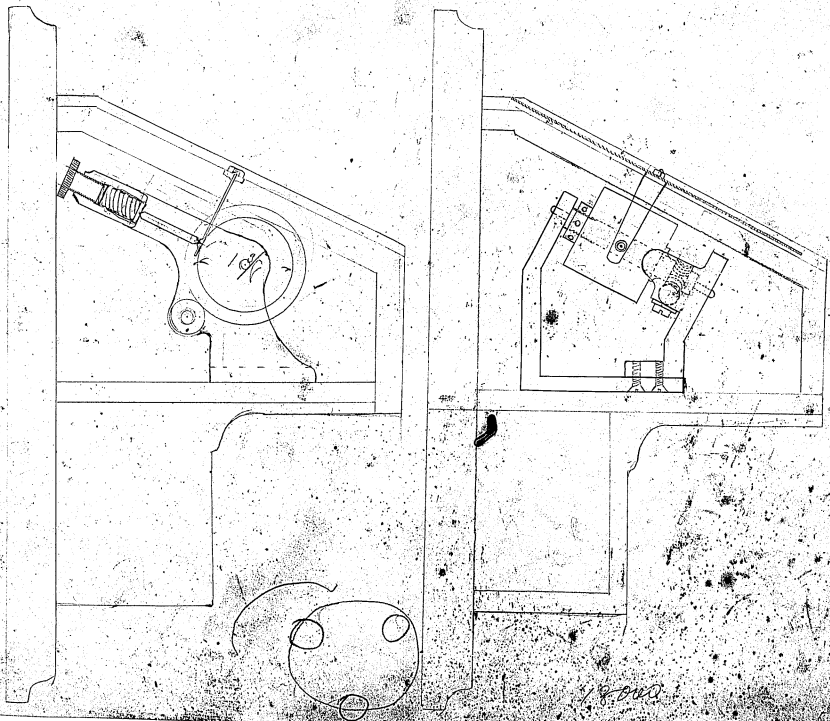
Came to me Nov 14, 1860



Will you design a
cheap little lathe for Johnson
to turn the chalks off the top
to turn by hand, both heads
stationary. With large collar
on one end of mandrel to ~~turn~~
set the tool to

120

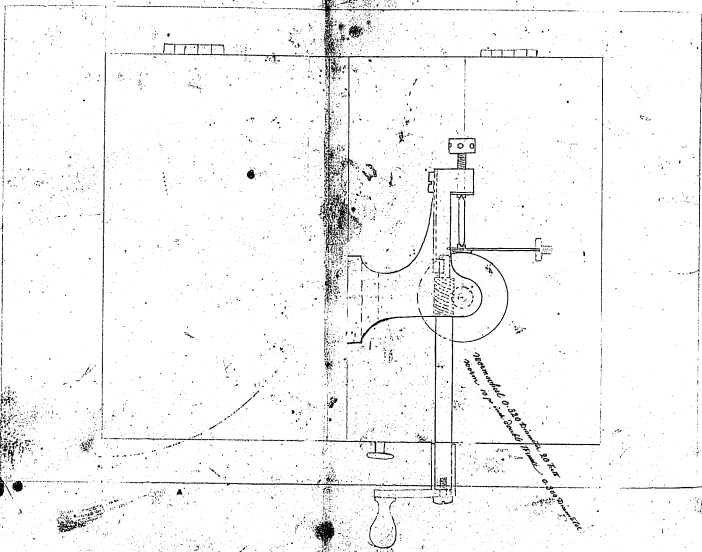
Came when
Apr-14, 1887
J. Cannon



Came to hand Apr 19, 1860
McCannan

McCannan

76



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A Note on the Sources

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END

4

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(1850-1878)

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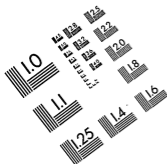
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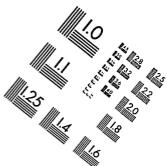
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National Park Service, Edison National Historic Site
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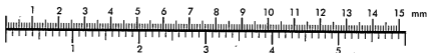


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